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Gas Water Heaters and the War Industry Board

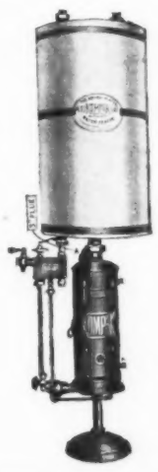
SHIPS and munitions are more necessary to win the war than water heaters. Ships and munitions require all the available copper and brass tube that this country can produce.

THEREFORE gas water heaters must be curtailed and copper tube conserved for war needs.

THE Kompak is the conservation heater. The No. 18 Kompak, which is equal to the No. 4 Automatic in point of service, has $\frac{1}{5}$ the amount of tubing, while the No. 32, which is equal to the No. 6 Automatic, has $\frac{1}{7}$ the amount of tubing. From 5 to 7 times as many No. 18 and 32 Kompak can be sold, therefore, with the same copper requirements as though the instantaneous type of heater was used.

WE are confining our entire production to this one style of heater, made in two sizes only.

IN order to meet the demands of the government we will temporarily discontinue our advertising. We want you to keep "Kompak" before you. When you need a water heater for house with one or two bathrooms, or in restaurants, barbershops, or other places where you would use No. 4 or 6 Automatic, buy a Kompak. You will find perfect hot water service, low selling price, very low installation cost, and no extra service pipe or meter required.



WATER KOMPAK HEATERS

Trade Mark
Reg. in U. S. Pat. Off.

THE LONG-LANDRETH-SCHNEIDER COMPANY
NEW BRUNSWICK, NEW JERSEY

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The Gas Machinery Company

Cleveland, Ohio

COAL GAS PLANTS **WATER GAS PLANTS**

BY-PRODUCT MACHINERY

NOTE:—

This advertisement is only to keep
you reminded of the

U. G. I. Vertical Retorts

The best system of coal carbonization
in America today

Figures prove this and the guarantees of

THE UNITED GAS IMPROVEMENT CO., Philadelphia

Back it up

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The Thing Demanded in the Preparation of Public Utility Reports Is Not Literary Arrangement, But Common Sense

Some Suggestions as to Arrangement, Mechanical Details and the Human Element

By PAUL BUCHER
Assistant Treasurer, Kings County Lighting Company

A common ground upon which we all stand is in our admiration of a well-balanced report, and our annoyance in extracting information from one poorly constructed.

Up to comparatively recent years no effort had been made to train men in this line of work. The results of months of labor were often thrown together in illogical sequence, and it was impossible to ascertain without delay the essential date that the report was supposed to show at a glance. Now the training of men is guided by teachers who realize the need of the times, and they are careful to have the results of all work carefully and systematically shown.

It almost seems as if many reports were made in the same order as in writing a book—introduction, theme, conclusion. The person to whom it was submitted had to search through it to find what he wanted to get, the most of the kernel, so to speak. There have been instances, however, where prominent promoters have paid large amounts of money for reports of propositions that it took them but a few minutes to digest. A report of this order cannot be anything but right, and it is needless to say the literary arrangement was not followed in this instance. What we ask in reports is not literary arrangement, but common sense.

The Meat on One Page

Is it not logical, in a report of large size with a title given on the cover, for a person to turn to the first page to secure information? The reason for looking inside at all is that the report is specifically asked for or the title interests one; then why ask the interested one to devote any time to pouring over statistics that cause him brain fag? Isn't it better to boil it down to bare essentials and put the results on the first page, then if one is interested in analyzing, criticising or otherwise studying the report, the essentials are shown in sequence.

The arrangement of data in reports of course must conform to the quantity and the kind of information given. But generally the following will be found of advantage in making the form of report attractive:

Title page.

Index.

Single page summary of conclusions.

Descriptive matter, showing purpose of report, method used in making and conclusions drawn from study of the work.

Data sheets in logical sequence.

Summary sheets, showing in greater detail data contained on single page summary.

Prints, if any, accompany the report.

Round Cornered Paper Binds More Attractively Than Squared Sheets

Addenda; unit cost data, authority for methods used, miscellaneous data used, showing clearly how secured.

After the general arrangement has been outlined, the attractiveness of the report should be given consideration. This involves first the grade of paper to be used. Almost all reports are made on paper that happens to be in stock. A high-grade onion skin is excellent for this work. As this has become practically standard in point of size, and is usually of fair quality, it readily can be employed. It is recommended, however, that the grade of paper be good, even if it involves the expense of a special purchase. The number of copies made must be also given thought. If made on a typewriter, not more than three copies with one original sheet should be made at once with ordinary stock paper. Naturally, on a duplicating machine any number of copies can be made, regardless of the stock used. If the number of copies made is more than three, and the report is large, it is recommended to have some made on a duplicating machine, as these are readily secured in most communities. The copies then are uniform and are not soiled by the careless use of carbon paper.

The round cornered paper binds in more attractive

fashion than the square sheet. Also the perforated paper allows a more uniform arrangement than the other, especially if the report is large and separate perforations have to be made.

After the paper has been selected for the letter-sized sheets, it may be found that they cannot be spread upon one sheet. If they can be put upon two sheets, the report will bind better if two separate sheets are used so that when the binder is open the report will be before the observer, the sheet to the left that ordinarily is blank containing one part of the report which is outlined on the opposite page.

Of course this introduces a blank page, as the back of this sheet cannot be used, but even with this objection it is a better arrangement than using a folded page. However, if the table is too large to allow this arrangement, the stock of the larger sheet should be the same as that used throughout the report for the smaller sheets. An exception to this may be made when the report is large and many folded sheets required; in this case a thin, tough paper can be used to advantage for all tables, whether they are on a letter-sized sheet or on a large folded one.

If many of the tables have to be written parallel to the larger axis of the paper, it may be better to have the whole report prepared in this manner, the size of the tables determining the binding margin, whether at the top or side. Personally, the writer prefers the binding along the side as in book form.

The type face to use is frequently determined by the machine at hand and by the type to which the author is accustomed. Single spacing with elite type, however, presents the best appearance for tables. Pica type may be better for the descriptive reading, but the style of type faces should be uniform throughout the report.

The Human Element

One of the most important factors in a successful report is the stenographer. It seems impossible to secure human labor that does not make mistakes even on small jobs, and when a stenographer makes a mistake in making up a report involving several carbons the result is most unsatisfactory. In the preparation of an elaborate report a great deal of rewriting must be done on the individual sheets, and most stenographers lose heart when they have the same page to do over several times. For this reason the writer prefers large reports be finally made on the duplicating machine.

A liberal margin should be allowed on all sides, but especially on the binding edge. With this provision the binder will open easily, allowing all of the print to be exposed without trying to force the binder apart.

The descriptive matter should be split into as many paragraphs as possible to relieve the eye. Naturally, all of the lines on the left-hand side should be in a straight line, but what is equally important is to so space the words in a line to avoid split words, and yet have the right edge fairly uniform. It usually is not done, but there is no reason why a stenographer cannot do so if a printer can.

All pages should be numbered, as this is necessary for the index. This number is least pronounced at the top along the middle line, but it should be in a uniform position throughout, and if some of the pages are written along and some across the smaller axis of the paper, the best position is in the upper right-hand corner.

The report should be bound in a permanent binder, preferably leather, unless the copies are not to be extensively used, where a tough manila paper may be used. The binding, screws, fasteners, etc., should not show at the outside of the binder. A cheap form of cover is secured by binding the cover paper forward and back five times and binding the sheets through the edges left inside.

The title should be placed upon the outside of the cover.

The files of the company should contain a copy of each and every report made.

While the above seems needless, it is one of the many things that we are all prone to think so simple and evident that it is not necessary to go to any trouble about. However, the fact exists that reports are still being made that have few of the essentials enumerated above.

Paris Echoes in the Gas Industry

By Francis Miltoun

We have had all manner of crises since the war began, that of the gas industry not the least thereof. There has been a considerable curtailment of output caused primarily of a shortage in raw material, and there has been a still more serious curtailment in the quality of the illuminant, which absolutely refuses to give that soft welcome glow which most desk workers prefer if it is properly distributed. The bat's-wing burner has passed; we see no more of it; without the mantel we should be in darkness. Industrial and national defense demands have taken many of the constituents from gas as it was known to domesticity, and we pay about double to boil our pot-au-feu or our Sunday poule-au-pot on a gas ring than we did before the war, the real, up-to-date, efficient gas stove so common in American homes being about the rarest thing one would expect to find in the modest man's apartment, renting, say, from 600 to 1,000 francs a year. What the rest of the population of three and a half millions which make up the Paris dwellers, save the 800 who eat in restaurants, do one is not so sure, except for this one fact that they pay a double gas bill, and this through no fault of the companies themselves.

An echo comes from Switzerland of a similar state of affairs, and of course the situation is the same in Germany, if not worse. In England it is doubtless better, on all accounts, though the miners of all grades of coal are manifestly not keeping up their before-the-war or early-war pace. This we know from the public prints, and presumably the technical press knows it still better, though they may have a satisfactory explanation. In Italy, with no coal within its border—about the only European country where American coal was sold before the war—the situation is still more acute. In Switzerland, at any rate, all manner of substitutes, as *ersatz*, as the Germans call them, have been put upon the market, intended to improve the quality of the gas in the hands of the private consumer. So fraught with possible danger has this been that the Swiss Government has been obliged to issue a *communique* for the public warning them against the use of any appliances intended to mix, presumably in an auxiliary burner, benzol, acetylene, alcohol, ether or other combustibles with the gas supplied by the companies throughout the Mountain Republic. "These appliances," says the decree, "will no longer be tolerated by the police." And a further state-

ment is made that "these products are required for other more important uses." *Verb. sap.*

In the Plainpalais quarter of Geneva gas consumers have been allocated two additional cubic meters per month for August and September, without being charged therefore. This seems enigmatical, but since the price was raised recently to 10 cents (American) the cubic meter (we pay 8 cents, an increase of 33 per cent, during the past year), this may be a sop, or a generous gift on the part of the company which is not apparent at this distance. At Eaux-Vives and in the center of Geneva the price varies from 6 cents a cubic meter to 6 cents and 2 mills to 8 cents at Plainpalais, which makes the same monthly consumption allowed cost from 84 cents to $1.08. The explanation is given by the municipality that one section is not as favorably disposed as another for the distribution, and that the original concessions were granted on this basis.

Experience Has Shown There Is An Economic Waste in Gas Standard as High as 520 B.t.u.

Arthur Hewitt Contends that from Standpoint of Consumer It would Mean Little or Nothing if Standard Was Fixed at from 460 to 470 B.t.u., While the Saving of Even a Moderate Amount of Coal or Gas Oil Would Be a Matter of National Importance

The events of the past four years have confirmed very emphatically the wisdom of the action taken by this association, in connection with the adoption by the Government of a calorific standard for town gas in Canada, and while the industry has had to face almost unsurmountable difficulties, it is gratifying to find that we are still able to "carry on," declared Arthur Hewitt, general manager of the Consumers Gas Company, of Toronto, in an address before the recent annual convention of the Canadian Gas Association.

The tremendous rise in the cost of raw materials, repeated increases in the scale of wages demanded for labor, the burden of new and increased taxation, have been causes of anxiety to those engaged in an industry which is generally recognized as being one of the most important necessities of our modern civilization.

But I suppose the greatest of our problems has been how to meet the unprecedented demand for gas. It would have been difficult in normal times to anticipate and provide for such increases as have been shown during the past two years, but with the prohibitive cost of new plant and the impossibility of securing certain necessary classes of materials required in gas works construction, the solving of this problem has necessitated the exercising of the utmost engineering skill, close supervision and constant and anxious thought on the part of those carrying the responsibility of maintaining an adequate supply of gas. That the industry has not failed to successfully meet this serious situation, is a source of satisfaction, and the members of this association may well be proud of the achievement. The situation is not improving, however, nor are our difficulties decreasing. It therefore behooves us to take counsel together, in order that by a more careful survey of the facts, and with a common knowledge of the conditions, we may endeavor to find some new line of activity which shall aid us in meeting the situation.

No Finality to Progress

Recent experiences have reminded us that there is no finality to progress, that new problems are constantly presenting themselves, and that in the solving of these problems we always add to our knowledge of the gas business.

When we asked the Government to set a standard of 500 B.t.u. for town gas, we were very modest, but in their wisdom they decided on a standard of 520 B.t.u. Experience has shown that there is economic waste in this standard, and now that there is a national necessity for conserving coal and gas oil it is a matter of regret that the Government has not yet seen its way to so revise the gas act as to permit gas companies to manufacture and supply gas of a quality suited to present needs, having regard to the importance of restricting the quantity of raw materials required in its manufacture, to the utmost practical limit. From the standpoint of the consumer it would mean little or nothing, if the standard for gas was fixed at, say, 460 to 470 B.t.u., while the saving of even a moderate amount of coal or gas oil would be a matter of national importance.

There is encouragement in the fact that both the United States Administration and the Government of Canada are looking into this matter, and I sincerely trust that they will act wisely and promptly in relieving gas companies of the necessity of continuing to meet the present uneconomical requirements.

Progress Made in England

It is interesting to review the progress which has been made in England, in the United States and in Canada in the matter of standards for manufactured gas. The subject was considered to be of such paramount importance in England that in the year 1900 special committees of the House of Commons and the House of Lords were appointed to take evidence and hear testimony for and against a change being made from the then almost universal standard of 16 candlepower as tested by a Sugg. No. 1 Argand burner, and it was not until about the year 1905 that any great progress had been made. It was not until 1911 that the gas light and coke companies were empowered to manufacture and supply gas having a calorific value of not less than 500 B.t.u. gross, and very recently under certain conditions gas companies operating in Great Britain have been permitted to distribute gas as low as 450 B.t.u.

In the United States the first State government to fix a calorific value for gas was the State of Wisconsin. That standard was 600 B.t.u. A few years ago a joint committee of the government of the State of New York and representatives of the gas industry fixed upon a standard for New York State of 585 B.t.u.

As you are all aware, the Canadian Government in 1915 adopted a standard of 520 B.t.u. gross, and in 1917 the Public Service Commission of the State of Massachusetts adopted a standard of 528 B.t.u.

I understand that the Fuel Administration of the United States is now engaged in obtaining data with a view to determining the quantity of gas oil per 1,000 and the quantity of gas coal per 1,000 cu. ft. which gas companies shall be allowed to use in the manufacture of their gas, and that these quantities will be based upon

a gas of very much lower calorific value than that which has generally prevailed throughout the country.

Reduction in Standard or Increase in Price

It is possible that the question may arise as to whether a reduction in the calorific value of gas should carry with it a lowering of the price at which the gas should be sold. A suitable answer to this question will be found in the fact that the increases which gas companies have been called to meet in their operating expenses are tremendously greater than any increases which have been made in the selling price of their product, and unless they are relieved from the present necessity of continuing to meet the unnecessary high standard of calorific value they will be forced to make further and very substantial increases in the price of gas to their consumers. But even presuming what is not a fact, that gas companies would benefit financially by a lowering of the standard, it would still be true that the conservation of coal and gas oil would be a very great national advantage.

It has been estimated that not less than 100,000 tons of coal would be saved in Canada annually, while the reduction in the quantity of gas oil required would be very large.

As practically all of this coal and gas oil must be imported from the United States, and the cost of it paid for in American exchange, which is very high, there is not only the actual saving of material to be considered, but also the lessening of the amount of money leaving the country at a time when every dollar is needed at home.

Discusses Doherty Plan of Selling Heat Units

R. G. Griswold Explains Its Advantages as Contrasted to Methods Customarily Followed

There has been so much discussion of the Doherty rate as applied to gas and of selling gas on a heat-unit basis that some discussion and explanation may be interesting.

The Doherty rate is a rate for selling public utility service in which each customer pays a customer charge uniform to all customers, plus a demand charge varied according to the customer's demand, plus a consumption charge based on the volume consumed as shown on a meter, declares R. G. Griswold, chief technologist of the Doherty Organization, in an article in Doherty *News* for September. Henry L. Doherty prefers to call such a rate a "readiness-to-serve" rate, but the term "readiness-toserve" has been applied to the customer charge described above, to the sum of customer and demand charges, and to some not even approximate imitations of Mr. Doherty's rate, so that the writer prefers the name "Doherty rate" as being least likely to cause misunderstanding.

Similarity to Selling Potatoes by Pound

Selling gas on a heat-unit basis means basing the price on the heat content, irrespective of the volume, instead of on the volume, or on arbitrary heat value per unit of volume. This is somewhat like buying and selling potatoes at a price per 100 lb. instead of per bushel, the farmer being required to raise only such kinds of potatoes as would weigh 60 lb. per bushel.

The B.t.u., or British thermal unit, is the heat necessary to raise the temperature of 1 lb. of water 1 deg. Fahr. For example, to raise 200 lb. 50 deg., as for a bath, requires 10,000 B.t.u. There are instruments called calorimeters in which a measured volume of gas is burned and all the heat used to heat water. From the weight of the water heated and the rise in temperature the heating value of a cubic foot of the gas is computed.

Gases vary widely in heating value per cubic foot as follows:

Kind of Gas	B.t.u. Per Cu. Ft.	Principal Use
Acetylene	1,680	Acetylene welding, etc.
Pintsch	1,500	Car lighting.
Natural	1,000	Substitute for all fuel if plentiful.
Carburetted water gas	700	City distribution.
Coal gas	560	City distribution.
By-product coke	525	City distribution and steel works.
"Blue" water gas	300	Industrial plants.
Producer gas	130	Industrial and steel plants.
Blast furnace	90	Steel plants.

Acetylene and Pintsch gases enjoy a limited usefulness where their concentration permits them to be transported in small containers. Natural gas is provided by nature in such abundance and purity in certain localities that it has superseded all other fuel. It seems remarkable that the only gaseous fuel that nature knows how to make in plenty is the one that man has not been able to make except incidentally. The next two gases, coal gas and carburetted water gas, are made primarily for city distribution. By-product coke oven gas is a by-product, and on account of its approximation to coal and water gas has been used for city distribution. "Blue" water gas, producer gas and blast-furnace gas are used only for industrial work.

It is significant that for industrial work, where the only standards are high efficiency and economy, coal gas and carburetted water gas are not used, but by-product coke oven gas, "blue" water gas or producer gas are always preferred. In other words, there is a saving in using 560 cu. ft. of 525 B.t.u. by-product gas instead of 525 cu. ft. of 560 B.t.u. coal gas (see table), or 700 cu. ft. of "blue" gas instead of 300 cu. ft. of carburetted water gas, or 1,500 cu. ft. of producer gas instead of 130 cu. ft. of Pintsch gas.

The Average Domestic Consumption

The average domestic customer of artificial gas uses about 25,000 cu. ft. of 600 B.t.u. gas, or 15,000,000 B.t.u. in a year. He finds this very satisfactory, as compared with coal or oil, and yet if we analyze his case on a B.t.u. basis we find that those 15,000,000 B.t.u. are contained in about one-tenth of a ton of coal which would cost $6 when coal is $10 a ton. In fact, he finds that $6 worth of B.t.u. plus $19 for other services to deliver the B.t.u. to him in the form of gas make a combination so perfectly suited to his domestic requirements that he cannot duplicate it with $25 worth of coal. He could have purchased the same heat units in the form of 15,000 cu. ft., of natural gas, which at the common

price before the war of 30 cents per 1,000 would cost $4.50. Natural gas has all the advantages of artificial gas (except in very limited cases, where either gas may have a special advantage), and therefore this cost is remarkably low compared to artificial gas. As a matter of fact, it compares very favorably with coal, and has been universally substituted for coal in heating houses when available. Where the customer uses natural gas for the purposes that artificial gas is ordinarily used, and also heats his home, he will use about 140,000 cu. ft., costing him $42 a year.

We have used pre-war figures. Present-day costs are much higher, but at higher rates the money items would bear the same relation to each other, and therefore it does not seem necessary in this article to discuss the effect of present-day costs.

Artificial Gas Sold in Small Amounts

We find that artificial gas is sold in small amounts at high prices and natural gas in large amounts at low prices, and yet neither company makes any more than a fair profit. One of the reasons for this is that the natural gas customer pays $42 and the artificial customer $25, or the natural customer pays $17 more. For this he gets 140,000,000 B.t.u. instead of 15,000,000 B.t.u., or 125,000,000 B.t.u. more. This additional heat costs the natural gas customer at the rate of 13.6 cents a million B.t.u., which is very cheap.

If we assume a gas company supplying the very minimum service (in which the customers would have to wait their turns like telephone subscribers on a party line), and the gas costs nothing, the company would have to provide a service and meter and a system of mains to supply all the services and provide an office and office force, have attorneys, pay taxes, sell bonds at a discount, borrow money, pay interest, etc. Such a business could not be conducted at less than $12 a customer, and might cost $15 or $18 a customer a year. In other words, a customer who pays $12 a year is only paying for the minimum service and some one else is paying for the gas that he uses.

This $12 a year a customer is the customer charge of the Doherty rate, and is the same for artificial and natural gas.

Now let us enlarge the company's service so that each customer may draw gas at any time as fast as he wishes (just as gas customers do, in fact), but we will continue to neglect the cost of actually making the gas. To do this additional service the company must provide a manufacturing plant (or leases, wells and pipe lines, if natural gas) and increase the capacity of its distribution system, thereby incurring additions to all items of previous expense. Such additional service cannot be provided for less than about $6 or $7 a year for the average customer on an artificial system. For large customers it would, of course, be more, and for smaller customers less. This is the basis of the demand charge in the Doherty rate. How it is prorated among the large and small customers will be discussed later.

We now come to the heat units, or gas itself. The cheapest heat unit on the market, generally, is coal. A ton of coal contains about 25,000,000 B.t.u., and $5 a ton is therefore equivalent to 20 cents a million B.t.u. In converting B.t.u. from the form of coal to the form of gas and transporting that gas to the customer, certain losses occur and certain labor and supply expenses are incurred, so that 20 cents a million B.t.u. in coal makes the gas cost 40 cents or 50 cents a million B.t.u. at the customer's meter. This makes the consumption charge of the Doherty rate.

The Losing Customer

The average domestic customer of artificial gas would then pay $12 as his customer charge, $7 as his demand charge and $6 for 15,000,000 B.t.u. at 40 cents, or a total of $25. This is just the same as he pays now (we are still using pre-war data). A smaller customer might use only half as much gas and on the "dollar rate" pay $12.50, but occasion expense as follows: as a customer, $12; by demand, $3.50, and gas consumed, 7,500,000 B.t.u., at 40 cents, or $3, making a total of $18.50. On this assumption the company is losing $6 a year. Other customers are larger than the average, and on a straight meter rate would pay more than they cost, which helps take care of the unprofitable ones. We should note that of the $25 paid by the average artificial customer nearly half is customer expense and nearly one-third is demand expense, and less than a quarter is heat units.

Let us try to analyze the average natural gas customer. Much natural gas is produced (or mined) by parties who sell to a pipe line company. The pipe line transports the gas to the town where it is to be sold, but the retailing is done by a distributing company, which is often the old artificial gas company. The usual arrangement between the pipe line company and the distributing company is that the latter shall sell the gas at, say, 30 cents per 1,000, and turn over to the pipe line company 70 per cent of the revenue. Going back to our average natural gas customer using 140,000 cu. ft. a year at 30 cents, he would pay $42, of which 70 per cent, or $29.40, would go to the pipe line company and 30 per cent, or $12.60, would go to the distributing company. This proportion is so general between distributing and pipe line companies that it may be accepted as being fair to each. You will now note that the distributing company gives practically the customer service, costing $12 a customer, as described above in our first assumption, and that experience has also arrived at about $12 as fair compensation for such service—in pre-war times.

Consumption Charges Dependent on Kind and Quality of Gas

As stated before, the customer charges should be the same for natural or artificial gas or gas of any quality. The demand and consumption charges are dependent on the kind and quality of gas. The following is a typical Doherty rate:

Annual customer charge, $12.

Annual demand charge 20 cents per 1,000 B.t.u. per hour.

Consumption charge 40 cents per 1,000,000 B.t.u. consumed.

The annual charges to be paid in twelve equal monthly installments.

The figures used in this typical rate are minimum rather than average, and would seldom yield a fair rate of return on the reproduction value of the property to-day.

The consumption charge is determined by multiplying the cubic feet consumed, as shown by the customer's

meter readings, by the average B.t.u. per cubic foot during the period for which the bill is rendered. The calorimeter must be located so that it receives a fair sample of the gas delivered.

Demand Charge Must Be Given Careful Attention

The demand charge must be given careful attention. The average customer on artificial gas uses as fast as 60 cu. ft. an hour at times, as shown by demand meters. Assuming 600 B.t.u. gas, then 60 times 600 B.t.u. makes the demand 36,000 B.t.u. an hour, and the charge at 20 cents $7.20 a year. If 20 cents per 1,000 B.t.u. is the proper charge when supplying the average artificial customer, it would not be enough if supplying customers for house heating. A hundred customers each with a demand of 36,000 B.t.u. an hour will not have a combined demand of 3,600,000 B.t.u. The maximum demand of the whole group will be only about 1,000,000 B.t.u., or an average of 10,000 B.t.u. a customer. This is because their individual maximum demands do not occur at the same moment and is called diversity factor, the diversity factor in this case being 36 ÷ 10, or 3.6. For house heating the diversity factor will be much smaller because practically every customer, on the coldest days, will burn gas at the maximum rate for a number of hours. Therefore, a plant capacity to handle 1,000,000 B.t.u. an hour would take care of artificial customers with a total of individual demands of 3,600,000 B.t.u. and a revenue demand charge of $720 a year; but for house heating with a diversity factor of 1.8 such a plant would only take care of 1,800,000 B.t.u. of individual demands paying $360 a year. Another confusing element is that an ordinary artificial company can take of a limited number of house heating customers, and increase the diversity factor below what it was originally. On the other hand, a very large industrial customer—adding, say, 100 per cent or more to the output—would give a very low diversity factor, but several such customers would show an increase or at least a partial recovery in diversity factor.

Two Methods of Applying Demand Charge

These rather uncertain elements do not condemn the Doherty rate, because they exist in any rate problem, even if ignored. In the Doherty rate we have the advantage that we have them confined within the limits of the demand charge, where discretion cannot go far astray in adjusting them. If we ignore them, we will still be better off than with other rates.

We have meters to measure volume that are very satisfactory, but we do not have a simple and cheap meter to record demand, particularly for small customers. For large customers we can afford a much more expensive meter that will record both volume and rate of use.

There are two methods of applying the demand charge: First, we may use a recording meter, allowing the customer to fix his demand as he uses the service and increasing the charges as each increased demand appears on the meter. Second, we may use a demand limiting device which would limit the customer's demand to what he pays for. The limit could be raised by making requests on the company. This second method has advantages for domestic customers, particularly for house heating, and, moreover, such a device would probably be cheaper to install and maintain than the recording kind and make the accounting much simpler. In lieu of a demand meter we may assign the demand charge by inspection of the connected appliances, giving consideration to the diversity factor of the several appliances of a customer. We may make periodical tests with portable meters. We may use the size of the ordinary volume meters required as a criterion. No matter whether we use a demand meter, a limiting device or connected load or meter size to find the demand, we should not neglect the diversity factor; not to make the charge less, but more. The present customers of an artificial gas company probably give the highest diversity of any gas business that will be obtained.

As illustrating how complicated problems can be solved by selling heat units on a Doherty rate, take the B. Natural Gas Company. This company has a pipe line about 25 miles long, running east and west, and supplying about a dozen communities. The largest city, representing over half the customers, is situated about in the middle of the line. The gas fields are at the two ends of the line. On account of the growth of these communities and the drilled-up conditions of the known gas areas, the supply of natural gas has become entirely inadequate. About 20 miles beyond the western extremity of this pipe line is a by-product coke oven plant with surplus gas for sale. It has been suggested that this by-product gas be piped into the natural system to supplement the supply.

As is true with all natural gas companies, the B. company has a wide variation in sales between summer months and winter months; with an adequate supply it would probably be in the ratio of 6 to 1. By-product gas is produced at a rate controlled by the primary product, coke, and therefore must be taken at a nearly uniform rate throughout the year. The summer demand would limit the maximum amount of by-product gas that could be used uniformly, and all the variations would have to be taken up on the natural supply. In the summer all customers would use by-product gas only, and in winter both by-product and natural. The customers on the eastern end of the system would get all natural in the winter and all artificial in the summer, while customers on the western end would get artificial gas all year. In the winter time the customers on the eastern end would get 1,000 B.t.u. gas, while those on the western end would get 525 B.t.u. gas, and a uniform price per 1,000 cu. ft. would be unfair.

All Customers Can Be Treated Alike

If we sell on a heat unit basis all customers can be treated alike without regard to the kind of gas actually burned. If the consumption and demand charges are fixed for manufactured gas, say "blue" gas, then so long as natural gas or by-product gas is available at costs less than gas can be manufactured for, those gases will be used. We might find that the market exceeded the combined supply of by-product gas and natural gas; in which case we might use a third kind of gas in the same system, say coal gas or "blue" gas, and each kind of gas might be supplied pure to some customers and the others get various mixtures and yet all be on the same rate and be treated alike.

If the B. Natural Gas Company was a pipe line company only, and distributed to the several communities through independent distributing companies, the logical compensation to the distributing companies would be

the customer charge. However, by that arrangement the distributing company would have no incentive to do more than connect up customers. In order to insure that the distributing company will look after the interests of the pipe line company also we may allow to the distributing companies only a part of the customer charge, say 80 per cent, and give them also a small share of the demand and consumption receipts, say 5 per cent.

This is by no means a complete discussion of the subject. It seemed necessary to make the article as brief and concise as possible. The money figures are based on pre-war conditions and are about the minimum. In making a rate for a particular locality several trial rates must be applied on earnings or expenses if purchasing. The three charges should not be below cost in any case, and the figures in the sample rate are about the minimum possible.

Gas in the Glass Industry

At the annual meeting of the Society of Chemical Industry, Dr. Morris Travers gave an account of the establishment of one of the three large British glass works which have been brought into existence in this country since the war began. Dr. Travers said that in the early experiments at one factory oil-fired furnaces were used, but eventually it was decided to put down a gas-fired furnace, which was built and running in seven weeks, capable of turning out 5 tons of glass per week. This was a non-recuperative furnace, but a later one was recuperative. The greater control and quicker working which gas gave opened up the prospect of knocking off the night shift, which was now necessary in the glass industry. This better control meant better glass. Discussing the requirements in regard to chemical glass, Dr. Travers commented on the fact that every chemist wanted an infinite range of beakers. That meant that blowing machines could hardly be used in the industry, because the large variety meant that only a comparatively few of each could be made. If it were possible, as he believed it was, to have beakers in three sizes only between the liter and 50 c.c., instead of eight, blowing machines could be introduced which would considerably reduce the cost of manufacture.

How the Gas Companies Are Helping the Nation

The Kings County Lighting Company, of Brooklyn, N. Y., has added six more stars to its service flag, representing men who have joined the service of the United States within the past week. Ralph Elsman, general manager of the company, in making the announcement, stated that fifty-one men from his company have answered the call and many of them are "over there." Two of the men have made the supreme sacrifice, and in a recent casuality list sent by General Pershing, another, Frank V. Austin, is reported missing after a battle. Mr. Elsman also said that one young woman had left his company and is now serving as a yeowoman in the Navy.

George Wilbur Hubley, former superintendent of the Louisville Gas & Electric Company, has been appointed administrative engineer of the Federal Fuel Administration of Kentucky, with headquarters at the offices of the State Fuel Administration in Louisville, Ky. Mr. Hubley, since his disconnection with the Louisville Gas & Electric Company, has been with the Engineering Corporation of Philadelphia.

A. F. Timberlake, business manager of the Consumers Gas & Coke Company, Waycross, Ga., who is now on leave in France, has been promoted to first lieutenant of the 118th Field Artillery. Lieutenant Timberlake enlisted in Waycross as a private and has won his silver star on work and ability.

Albert Hunt, of the auditing department of the Providence Gas Company, Providence, R. I., has been chosen as assistant to General Secretary W. A. Morse, of the Holyoke Y. M. C. A., and will assume his new duties early next month. Mr. Hunt has had no previous Y. M. C. A. experience, but his business training qualifies him for his new position.

The New Haven Gas Light Company, New Haven, Conn., which has held canning and drying demonstrations during the month of August under the direction of Miss Mathilde Hawkins, director of the School of Science, Y. W. C. A., is using 500 canning manuals as textbooks. The monthly attendance at these classes averages about 521.

The Sandusky Gas & Electric Company, Sandusky, Ohio, now has in its service flag four stars, two new stars having been added during the past week for Joseph Berry, lineman in the Signal Service, and Wilson Parker, pipe fitter, a selective service man.

Moonshine De Luxe

For heating an illicit still in a house in Belfast, the *Gas World*, of London, tells us, gas was used by a man named Gavin Daily, whose whereabouts are not known to the police. The gas was stolen, too, being taken off the service pipe before it reached the meter. At the city assize on the 18th inst., Hugh Fitzgerald, Daly's assistant was indicted for stealing the gas. Fitzgerald, who had been already convicted in regard to the illicit still, denied knowledge of the gas; but he was found guilty and was sentenced to two months' imprisonment, to commence from the termination of the sentence he is serving in connection with the illicit distilling charge.

Coffee Roaster's Ashes Valuable

The National Coffee Roasters' Association recently received a communication from one of its members saying that a considerable saving may be effected from the ashes of their roaster plants. This member has been saving everything from his plant to see whether his chemist could discover some use for that which ordinarily is wasted. This led to the discovery that ashes from under the gas-heated cylinders were worth $47 per ton for the 8 per cent potash they contained.

Freight charges may be prohibitive in some places in the country, but roasters near large fertilizer plants may be able to turn this waste into cash and at the same time add to our fertilizer supplies the much-needed potash.

Three Times a Week 2,500 Children Meet in Front of Gas Ranges in Missouri and Repeat the "Four H Pledge"

Enthusiasm of Boys' and Girls' Canning Clubs Spurred on by Buttons, Seals, Songs, Yells, Contests, Exhibitions, Pledges and Prizes

By LOUIS RESNICK

General Manager, the Associated TradePress, St. Louis, Mo.

Missouri, the "Show me" State, has—so far as a certain movement in the gas industry is concerned—entered the "Show you" class. While gas men in New York are laying plans for introducing gas and its uses to Young America through the public school system, the gas industry of Missouri in general and St. Louis in particular is the proud parent of a little family of 2,500 youngsters—boys and girls, black and white, ranging in age from eight to eighteen—who not only know all that the efficient housewife should know about the use of gas, but have been trained to spread the gospel.

JUDGES OF CLUB CONTEST—LEFT TO RIGHT, MRS. ALFRED FUSCHMAN, MRS. GEORGE GELHORN, JOHN BURNS, MISS GRACE GOODPASTURE, DR N. F. GEPHART

While Eastern companies are yet paving the way to gas instruction of the young, 618 boys' and girls' canning clubs were being taught the use of gas throughout the State of Missouri. The clubs, each guided by a trained domestic science teacher, met several times a week throughout the summer in the public schools equipped with cooking apparatus, in churches, settlement houses and, in one case, even in an exclusive orphans' home.

Breadth of Training in Use of Gas

Some idea of the training in the use of gas obtained by the children may be had from the fact that in St. Louis alone twenty-nine clubs, of about twenty children each, canned a total of 5,300 jars of fruits and vegetables during July alone. This represents the work done in the classrooms. How much more along these lines was accomplished at their homes cannot be estimated.

The boys' and girls' canning club movement is one of the many war-time prodigies. It was born at Washington in the House of Hoover. Its parents, however, were too busy with other matters and so handed the child over to the country at large. In St. Louis, Mrs. Alfred Buschman, one of Mr. Hoover's voluntary assistants, became the child's foster mother and J. J. Burns, superintendent of the commercial department of the Laclede Gas Light Company, its foster father.

The child soon grew too big to be taken care of by these two individuals, and so Mrs. Buschman induced twenty-eight graduates of domestic science schools to help her, and Mr. Burns divided his time rather equally between the affairs of the gas company and the canning clubs.

THE MARQUETTE SCHOOL CLUB

Board of Education at First Reluctant

The board of education, imbued with the old Missouri "Show me" spirit, was reluctant to contribute the use of the domestic science rooms of the grade and high schools to the movement. Mrs. Buschman, after much argument, obtained the use of one school building. Not many days later the superintendent of schools insisted that she establish boys' and girls' canning clubs in the public school buildings in every section of the city. And there they have been all summer.

The Food Administration, the board of education and the gas company worked hand in hand. The first provided the idea and the club leaders, the second the mechanical facilities and the latter the service of one of its best organizers, free gas appliances here and there, and innumerable other services.

The question, no doubt, presents itself, "How was the interest of the children centered about such a dry subject as the gas stove when the very producers of both the stoves and the gas look upon their business as a most unromantic affair?"

Here is the answer: Buttons, seals, songs, yells, contests, exhibitions, pledges, prizes.

The purpose for the establishment of the boys' and girls' canning clubs was multifold. A few of the aims, as outlined by Mrs. Buschman, leader of the movement in St. Louis and sponsor of the team which won the Missouri State Canning championship, are:

1. To save railroad space for Uncle Sam by canning in the home the agricultural products of the local community, thereby minimizing the transportation both of raw foodstuffs and the finished products.
2. To teach the child conservation of food, fuel and labor.
3. To instill practical patriotism.
4. To train the child to teach all these things to the parent in homes where the parents are unable or uninclined to go forth in the quest of learning.

2,500 Children in Front of Gas Ranges Three Days a Week

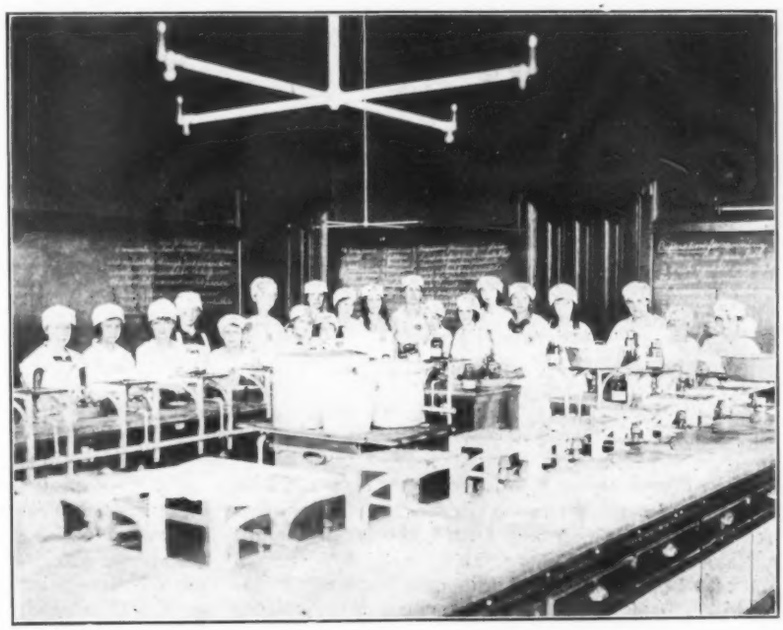
The children who enrolled in the canning clubs were told all these things, but the mere telling was not enough to both arouse and retain their enthusiasm. A "Four H Pledge" was devised as follows:

"I pledge my head, my heart, my hands and my health through food production and food conservation to help win the world war and world peace."

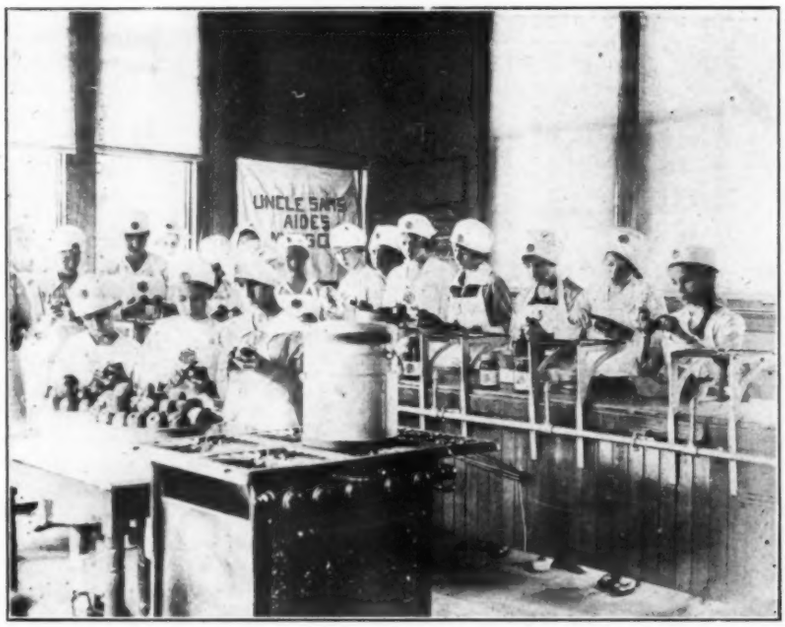
Every Tuesday, Thursday and Saturday morning 2,500 children meet in front of gas ranges throughout Missouri and with the right hand at salute repeat this pledge.

There was devised an "Achievement Button," which was given to each boy and girl after he or she had canned twenty-four jars of food. "Four H" labels were designed for the jars and "Four H" shields for the cap and apron uniform of the canning clubs. The cold pack method of canning described in a previous issue of the American Gas Engineering Journal was followed at all the clubs.

Then when the 618 clubs of the State were under full sway, contests were arranged in each city, the prize being a trip to the State Fair at Se-



ANOTHER MARQUETTE SCHOOL CLUB VIEW



THE EMERSON SCHOOL CLUB AT WORK

dalia, Mo. The competition included not only adaptness at canning, but the ability of the child to explain the work during the process, and to answer questions as to methods of operating the gas stove and regarding the conservation of food and fuel generally.

Gas Ranges Performing Before Audiences of Tens of Thousands

In St. Louis the final contest was held in the white tile basement of the Laclede Gas Light Company. The judges were Mrs. Buschman, Miss Grace Goodpasture, field agent of the Boys' and Girls' Canning Clubs, with headquarters at Washington, D. C.; Dr. W. F. Gephart, Food Administrator of St. Louis; Mrs. George Gelhorn, chairman of the State and City Relations Committee of Missouri Food Administration, and Mr. Burns, of the gas company.

A club of three girls took the championship of St. Louis, three tots, all pupils of a grammar school. They were sent to Sedalia to compete with similar prize-winning teams from all parts of the State. Here the children stood at gas stoves on a high platform before tens of thousands of housekeepers, farmer women, city women, State officials, domestic science instructors and the usual conglomerate State fair attendance. Before such an audience the children in piping voices described the "why" of each step in the process of home canning and gave their elders instructions on the conservation of food and fuel.

Immediately after passing through this ordeal the St. Louis team scribbled on the back of a picture post card addressed to Mr. Burns, of the gas company: "We think we have landed something," and the next morning, as Mr. Burns read this card, he also had before him a newspaper announcing that the St. Louis team had won the State canning championship.

"That little card means more to me than the acquisition of a new million-feet a month gas consumer," Mr. Burns said.

Nor did the canning club leaders stop with a State contest. During the week of Sept. 10 to 16 a similar contest will be held at Sioux City, Iowa, to determine the Middle West championship.

Prizes Worth While

On Aug. 29 100,000 children of St. Louis celebrated Festival Playground Day in Forest Park, and the principal attraction was a competitive exhibition of the products of the boys' and girls' canning clubs. In addition to a number of cash prizes five children won prizes that will entitle them to the expenses of a week-long trip to Columbia, Mo., during Farmers' Week of the School of Agriculture of the University of Missouri.

This is not all. There are a couple of canning songs, one for the boys and another for the girls, one of which follows:

CAN, CAN, CAN, THE GIRLS ARE CANNING

(To be sung to the tune of "Tramp, Tramp, Tramp, the Boys Are Marching.")

First Chorus—
Can, can, can, the girls are canning,
Mason jars and bottles full—
And they work from morn till night
So that they can do it right,
And they can to can the Kaiser "over there."

Verse—
Mrs. Smith and Mrs. Brown,
Every girl in this here town,
Wants to do her little "bit" to help us win.
And they say, "What can we do
To be any help to you?"
Take that can and can up
All you can right now.

Second Chorus—
Can, can, can, the girls are canning,
Cheer up, Allies, they will come—
Peas and corn, and apples, too,
Beans for every kind of stew,
And they can to can the Kaiser "over there."

The St. Louis gas men *are* "getting them while they are young."

---

30 Cent Increase Granted Providence Company

The State board of public utilities recently rendered its decision in the matter of the increased rates asked by the Providence Gas Company, allowing the company to charge a base rate of $1.30 net for every 1,000 cu. ft. of gas sold, instead of $1.35, which was asked.

This rate applies to gas sold in the cities of Providence and Cranston and the towns of North Providence, Johnston, Smithfield, Warwick and East Providence, except in the Riverside district of the town of East Providence, where the rate will be $1.45.

In its decision the commission states that it finds the Providence Gas Company has sustained the burden of proof and has shown that an

increase of 30 per cent in its rates is necessary in order to obtain a reasonable compensation for the services it renders, but that it has not sustained such burden as to the increase of 35 per cent contained in its proposed schedule.

The rates specified are based upon the maintenance by the company of an average standard of 580 B.t.u. per cubic foot of gas, except insofar as the maintenance of such quality of gas becomes physically impossible through inability of the company to secure proper materials or through the intervention of Federal authority, of either of which facts the company shall at once give notice to the commission.

The commission justifies the proposed increase in rates on the ground of the greatly increased costs of the materials which it is now bearing and with which it is confronted in the future.

The commission also states that the costs of oil and fuel are beyond the control of the company, and it does not appear that any relief in the form of lower prices can be anticipated. In regard to the increased prices paid for manufacturing salaries and manufacturing labor, the commission further states that it is convinced that the company would not willingly pay excessive amounts in salaries and wages, and it is fair to assume that such increases were almost compelled by the exigencies of the situation.

The commission's decision proceeds:

"After full hearing and mature consideration of the evidence in the case, it is ordered, adjudged and decreed by the commission:

"1. That the schedule of rates filed by the Providence Gas Company under date of July 12, 1918, effective Sept 1, 1918, insofar as the same differs from the schedule of rates herein ordered to be placed in effect, is unreasonable, unjust and unjustly discriminatory.

"2. That said Providence Gas Company establish and maintain for all gas billed after the first day of September, A. D. 1918, the following schedule of rates:

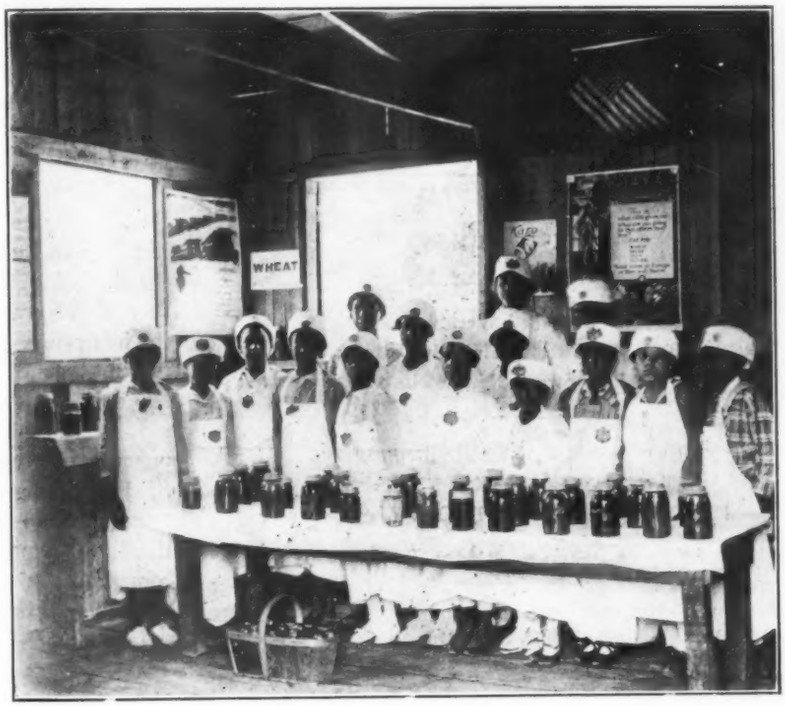
"For all gas sold in the cities of Providence and Cranston and the towns of North Providence, Johnston, Smithfield, Warwick and East Providence, except in the Riverside district of said East Providence. For the first 5,000 cu. ft. used in any one month, $1.30 net; for the next 5,000 cu. ft., $1.23; for the next 40,000 cu. ft., $1.17; for the next 75,000 cu. ft., $1.10; for all in excess of 125,000 cu. ft., $1.04.

"For gas sold in the Riverside district of East Providence: For the first 5,000 cu. ft., $1.45 net; for the next 5,000 cu. ft., $1.38; for the next 40,000 cu. ft., $1.32; for the next 75,000 cu. ft., $1.25; for all in excess of 125,000 cu. ft., $1.19.

"3. That said Providence Gas Company shall allow the discount of 10 cents on each 1,000 cu. ft. of gas consumed in any one month whenever the bill for such gas is paid within fifteen days from the date of the bill.

"4. That said Providence Gas Company be permitted to charge a minimum rate of 50 cents per month, subject to a refund if the consumer's bill exceeds the sum of $6 per year.

"5. That said Providence Gas Company file with the public utilities commission on or before Sept. 1, 1918, a cancellation of its schedule of rates filed with the commission under date of July 12, 1918, together with a schedule of rates to conform with the requirements of this order."



LEFFINGWELL PLAYGROUND CLUB—NOTE CONTRAST BETWEEN COSTUME AND FACES

The Fourth Liberty Loan

The campaign for the Fourth Liberty Loan begins Sept. 28 and closes Oct. 19. While the amount has not yet been announced, it is generally conceded it will be for a larger amount than any of the preceding loans. The American people, therefore, are called upon to raise a larger sum of money in a shorter length of time than ever before.

Repairs Completed, Rochester Plant Again in Operation

The Rochester, N. H., plant of the Strafford-York Gas Company, which has been shut down for about a month while needed repairs were going on, was started up Monday morning, Aug. 26. Rochester gas consumers have been obliged to use the gas manufactured in Somersworth during the period the plant was closed.

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Resurrecting the Old-Time Bogey Man

It is more or less to be expected every now and then that the local daily newspaper will distort matters pertaining to the motives of the gas company and the gas industry. Newspaper editors are not invariably marked by extensive intellectual acquirements. As a general thing, they are laymen to technical matters to just as great a degree as their readers. And the ways of an industry so thoroughly based on scientific principles as the day's industry are obviously very much of a mystery to the layman kind. When the gas man gets into the intricacies of the heat unit standard, he gets beyond the reaches of the average newspaper man's understanding, and when we do not understand we usually suspect. Besides, all matter that is published in a newspaper is not the product of its editor or representative of his intelligence. There are contributors without number, some of even higher intellectual attainment than any member of the paper's actual staff, and others sometimes unbelievably lacking in breadth of information on sophistication.

But when we see a publication of the type of the *Municipal Journal* resurrecting the old-time bogey man, as it does in its issue of Sept. 7, under the caption of "Gas Profiteering," we begin to wonder if the war is not getting onto the nerves of some to a greater degree than we had imagined.

This is essentially a technical publication addressed particularly to city engineers, city officials, etc. It is edited by an engineer who has been a professor at a university of high reputation for the soundness of its teachings, who has practiced successfully as an engineer and consulting engineer, who has written books on technical subjects which have won the approval of authorities, and who can by no stretch of the imagination be termed "green behind the ears" or unsophisticated.

The editorial deals with a conference held by the director of gas plants of the U. S. Fuel Administration, which the AMERICAN GAS ENGINEERING JOURNAL did not even know took place. Exception is taken to the fact that the director of gas plants, in setting a maximum heat unit standard, did not "see fit to safeguard the public interests by ordering a horizontal and proportionate reduction in rates," entirely overlooking the fact that the power to fix rates for local committees is a power that even the President of the United States has indicated he does not possess, much less the director of gas plants or his senior, the U. S. Fuel Administrator.

The editorial is based mainly on an expression of a New York public service commissioner, in which these statements were made:

"The conference was high-handed and arbitrary. James T. Lynn, director of gas plants, said the meeting was to consider oil and gas conservation, and in

answer to questions about the interest of the public in the proposed order, he said: 'We aren't going to consider these matters.' After calling on various gas company representatives, none of whom opposed the order, he adjourned the meeting, saying its purpose had been accomplished. The attention of Dr. Garfield, Fuel Administrator, was called to the high-handed character of the hearing, and a review of the entire matter asked. I know of no more cold-blooded profiteering than this attempt to improve the financial condition of the gas companies through the fixing of a lower gas standard by the Government, under the guise of fuel conservation."

Now, no representative of the AMERICAN GAS ENGINEERING JOURNAL was present at this conference. It consequently does not know what took place. But it does not take a great deal of imagination to draw up a picture that we will wager is accurate.

This New York commissioner found himself in a situation where he was merely among those present, rather than being conspicuously the center of the stage, as his years of sitting in hearings in his own bailiwick had accustomed him to being. He possibly attempted to introduce an angle that to this hearing was irrelevant. The war effort of the United States has been a hurry-up job. When any Government body sets out to determine a ruling it is a case of necessity that it confines itself to discussion strictly to matters relating entirely to that problem. It has to to keep up. Too much talk is destructive to timely and effective effort.

Mr. Lynn evidently wanted to have his ruling out before next spring, when it would be useless for the purpose intended. Consequently, he kept the discussion down to relevant facts. In doing so he doubtless piqued the vanity of our New York commissioner.

And matters pertaining to rates are outside the Fuel Administration's scope. What the Fuel Administration is seeking to accomplish is to make a terribly inadequate coal and oil supply provide for the welfare of this country's armies, not hamper or delay the war effort of the country and its allies, promote the comfort and health of the country's people and go as far as possible towards maintaining the country's industries. It is not concerned with matters of dollars and cents as a paramount consideration. Its big object is fuel conservation in its broadest sense.

But the *Municipal Journal* does not see it in this light. The tone of its editorial leaves grounds for the inference that it believes Mr. Lynn "is incapable of rising beyond questionable loyalty to an industry in which he was long engaged to the plane of discharging his office as an unprejudiced and unbiased Government official." This is unfair and puerile. Such inferences, under the circumstances, indicate a state of hysteria—of blind, unreasoning shying at shadows.

If a municipality is hog-in-the-manger-like, exacting its pound of flesh without getting any real benefit out of it by compelling the gas company to waste oil, the Fuel Administration is not concerned with the pros and cons of this matter. But it is concerned with those barrels of oil that are being consumed without returning any benefit.

What the Fuel Administration wants to know is how many B.t.u.'s in the gas are practically utilizable in the district? If that quantity is 528 or even only 400, that is all the gas companies are going to get materials to provide, regardless of whether local regulations require them to meet a 600 B.t.u. standard or not. As we understand it, it is not the intention of the Fuel Administration to deny the public any B.t.u.'s in its gas that it can use in obtaining necessary comforts and conveniences, but it is not going to furnish oil to make B.t.u.'s to go up the flue pipe without serving any more useful purpose than enabling local officials to vent local animosities or prejudices, or to persist in theories that are known to intelligent people as erroneous.

The *Municipal Journal* should have been aware of these facts; should have had knowledge of the Fuel Administration's powers—it cannot say to this or that gas company, "You must accept these rates"; it can only withhold the fuel. Nor can it say to this or that municipality, "You must set this standard"; but it can compel it to keep it down by refusing to furnish the oil to provide a higher standard.

Likewise, the *Municipal Journal* should have been too well informed in its own particular field to have accepted as gospel this particular New York commissioner's interpretation as to what constitutes the best interests of the public.

A foremost journal in the construction field early in the year cried "wolf" at the commission in regard to the inadequacy of a subway station then under construction. But the commissioner felt he would not be serving the public welfare if he went ahead on the alterations in mind. He felt the contractor demanded more for the additional work than should be paid, although the sum would not have done any great injury to the city treasury. He saved those few thousand dollars—served the public welfare insofar related to its immediate store of funds—but to-day when people want to go from Grand Central to Times Square they walk, even though there exists an expensive stretch of tunnel and tracks already laid, over which no trains run, between these points. The "wolf" existed in fact.

This same commissioner feels, as a matter of abstract justice, that if the heat units required in his district are reduced, rates should be reduced proportionately. We have heard no expression from him that we recollect to the effect that the gas companies in his district are earning a profit or that they are even meeting costs.

And it would be a poor guarding of the public's welfare that would save each citizen a few dollars a year on gas and leave him at the end a bankrupt gas company.

Thus the viewpoint of this commissioner as to what constitutes the best interests of the public cannot be regarded as infallible.

Arriving at a General Understanding as to What Proportion of the B.t.u.'s in a High Standard Gas Are Practically Utilizable

The question of what proportion of the B.t.u.'s in a high standard gas are practically utilizable in the district has become very important. We have reached a point where close figuring is necessary.

The day is past when the gas man could say: "Five hundred of the B.t.u.'s I send out do useful work, but to make sure, I'll give them five-fifty," the extra fifty being a margin of safety to insure against complaints of unsatisfactory service.

But the present coal and oil situation has made such margins an extravagance—a criminal waste it might well be said. In these days we cannot afford to guess. We must know.

The AMERICAN GAS ENGINEERING JOURNAL has come across considerable evidence as to what quantity of heat units are practically utilizable by the average gas appliance in the district. It had gotten the impression that once we went beyond a certain point we were merely providing more heat for the flue. Also it had begun to think these limitations were generally known and conceded throughout the country.

Evidently, however, it had concluded erroneously. The Indiana commission states in a recent decision that "it is obvious that a greater consumption of low B.t.u. gas is required to do a certain task than would be the case with a high B.t.u. gas." This, on the face of it, might seem as obvious as the commission declares it to be. But the commission is discussing a gas of around 500 B.t.u. as against one of 600 B.t.u.

Assuming a 525 B.t.u. gas as being the high point of what is practically utilizable in the district, the findings we have encountered would stamp the Indiana commission's statement as an absurdity. Five hundred and twenty-five B.t.u.'s would be all that cooked the meals on the housewife's gas range, and if she was using a 600 B.t.u. gas, the volume consumed to do the work would not be appreciably lessened as compared to the volume of 525 B.t.u. gas required.

Such facts have been testified to repeatedly. Necessarily the Indiana commission must have had knowledge of this testimony. Yet it made the statement it did in an official ruling. There is only one conclusion to be drawn. The Indiana commission does not believe the data on which the conclusions are founded are sufficiently complete to warrant such a conclusion. And the Indiana commission is but one of several which have indicated such lack of conviction.

We are working at cross purposes so long as there is not a general understanding and conviction on the point of the number of B.t.u.'s that are practically utilizable in the district. It would seem that there is a call for extensive investigation and research. Unquestionable authorities have concluded that a gas beyond 525 B.t.u.'s is not an economical gas. Undoubtedly they were convinced before they expressed themselves to such effect. But until all who have official authority are convinced, the gas industry must expect to encounter suspicion and skepticism. Such drawbacks should be readily cleared away. It merely requires the effort.

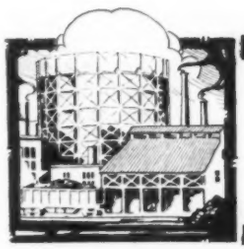
Valor and Thrift

A nation at war needs two prime qualities, valor and thrift. Its fighting men must possess valor in order to give a good account of themselves against the enemy. Its workers must possess thrift in order to pay the taxes and subscribe to the bonds which are necessary to supply the vast quantities of food and clothing and ammunition, of coal and machinery and ships which support the soldiers.

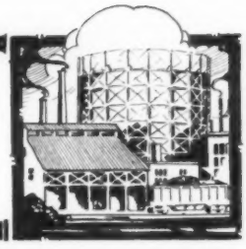
The American soldiers have valor. Nobody ever questioned it, but they have proved it beyond a peradventure on the Marne and the Somme. The American workers have thrift. They have proved that by their absorption of three Liberty Loans, each with a much larger subscription list than its immediate predecessor, and by the purchase of large quantities of War Savings Stamps.

Now valor and thrift must travel hand in hand to reach victory. As the American soldiers go ahead over there, the Government's need for money becomes more pressing. Our army is growing by leaps and bounds. It costs more daily to feed it and build its lines of communication and keep in its stores the requisite quantity of supplies of all sorts. So the United States is issuing another series of bonds—the Fourth Liberty Loan, for which it bespeaks the continued and increased thrift of the public. This Fourth Loan will be bigger than any of the others, therefore more money must be earned and saved to absorb it.

Our soldiers go forward. We at home must press forward with our part of the task just as they do with theirs. Saving, self-denial, sacrifice, if need be, must enable us to take the Fourth Loan. There can be no faltering. Men and money must go on fighting until the war is won. Shall we not furnish the thrift with as great good will as the boys in khaki display in going over the top?



NEWS OF THE GAS INDUSTRY



Baltimore Company Training Women to Take Places of Men in Service

The Consolidated Gas, Electric Light & Power Company, of Baltimore, Md., is training women for the work of reading meters and installing heating and lighting appliances.

Oil and Gas Company Organized by Hutchinson Men

A charter has been issued to the R. & H. Oil & Gas Company, organized by several Hutchinson, Kan., men with a capital stock of $50,000. The company has 1,000 acres under lease in Chautauqua County, Kansas, on which they expect to start drilling operations in the near future. According to the prospectus just being issued, the leases owned by the company are almost surrounded by production, and geologist reports on the territory are most favorable.

The officers of the company are: L. C. Hughes, president; Aaf Aldred, vice-president; R. P. Martin, secretary-treasurer; Irwin Snattinger, of Topeka, attorney, and D. C. Royston, of Newton, manager. The offices are in Room 405, First National Bank Building.

Company Incorporated to Pipe Lines for Gas

Articles of incorporation of the A.-B. Pipe Line Company, with a capital stock of $100,000, divided into 1,000 shares of a par value of $10, were filed with the Louisville (Ky.) county clerk. The corporation proposes the construction and maintaining of pipe lines for the transportation of gas and other mineral products and is authorized to incur liabilities not to exceed the amount of capital stock. The incorporators are Reuben E. Wood, P. P. Lynch and E. F. Holsten, each holding three shares of the capital stock.

Leominster Company Pays Tax of $12,018.49

According to a recent announcement by the Leominster assessors, the largest 1918 tax is paid by the Leominster (Mass.) Electric Light & Gas Company, $12,018.49.

Gas Expert Costs City $3,340 in Short Time

The services of Alton D. Adams, Boston gas expert, retained by the city of Worcester, Mass., in its fight against the increased price of gas to $1.15 has cost the city $3,340 in the last few months.

San Diego Company Sells $150,000 Notes

The San Diego Consolidated Gas & Electric Company, San Diego, Cal. (a Standard Gas & Electric Company subsidiary), has sold an issue of $150,000 five-year 6 per cent collateral trust gold notes under authorization of the Railroad Commission of California and approval by the capital issues committee.

Heavy Gas Flow at New Well of Utah-Wyoming Company

The Utah-Wyoming Consolidated Oil Company's new well on the Willie farm, near Byron, Wyo., is now producing upward of 5,500,000 cu. ft. of gas a day.

This new well first encountered gas at an unexpected depth—only 400 ft. Gas was not looked for short of 1,000 to 1,600 ft. The water came in strong and it seemed impossible to effectually case it off. So the drilling was resumed. At 600 ft. another but stronger gas flow was the result.

The old producing well, about half a mile distant, is furnishing more than 5,000,000 cu. ft. daily of gas to the Carbon Black manufacturing plant near Cowley.

Interesting Statement as to Cost of Operation During War Period Brought Out in Decision Granting Increase to Chicago Company

In the recent decision of the Illinois Public Utilities Commission granting the Peoples Gas Light & Coke Company the right to increase its gas rate to Chicago consumers approximately 27½ per cent are contained some interesting statements as to the cost of operating gas companies during this war period.

"It appears from the records," says the utilities commission, "that there exists the following percentages of increases over normal times in necessary production costs to the company:

"In normal times the cost of gas oil averages 2.44 cents per gallon, whereas it is now costing the company over 6.35 cents, an increase of over 160 per cent. This oil figures very largely in the production of gas, being required to carburet the blue water gas that is produced in the generators when passing steam through incandescent fuel. The quantity of oil used in 1918 will be approximately 70,000,000 gal., and any increase in the cost must have a considerable effect on the operating expenses of the company.

"Large quantities of solid fuel are also used, including anthracite coal, beehive ovens and by-product coke and bituminous coal. This is required for generator and boiler fuel, and the amount used in 1918 will be in the neighborhood of 400,000 tons. The trend of prices for these materials has been constantly upward, whereas the quality has consistently deteriorated because the demand for solid fuel is in excess of the supply. The average cost per ton of the various kinds of fuel used has increased in 1918 over normal years by 116 per cent. For producing the steam

soft coal from Illinois is used, and the cost per ton for this has similarly gone up, being about 60 per cent higher to the company than during normal times.

"In sympathy with the advanced cost for materials the expense for labor required in producing gas was correspondingly increased, being close to 100 per cent higher for 1918 than during normal years.

"It is a matter of common knowledge, because of the unusual conditions brought about by the war, and the evidence in this case fully sustains the fact as applied to the petitioner herein, that the operating expenses of public utility have increased and are likely to increase for some time to come in a serious degree. The United States Government, realizing the situation and the necessity of keeping the public utilities of the country at a high state of efficiency, and further realizing the necessity of enabling public utilities to be sufficiently supplied with money to operate their plants in a manner satisfactory to the public, has repeatedly indicated a feeling that increased rates for service should be permitted by State commissions and other similarly regulatory bodies where such increases are necessary for the efficient conduct of public utility business, and where such increases will not impose an undue burden upon the consumer. The commission does not believe that the public should pay more than a reasonable price for public utility service, and yet a rate that a few years ago would have been unreasonable for such service under present war conditions may be considered reasonable."

The commission's ruling states that the record discloses that the 1917 earnings of the gas company left a deficit, after paying bond interests for that year, of $365,201.35, which deficit had increased at the end of the first five months of 1918 to $953,116.56. It is declared that a well-settled principle in public utility regulations is that just and equitable rates should produce a reasonable return upon the fair amount of the property devoted to public service.

The commission ordered that the following schedule of minimum rates for gas service in the city of Chicago shall become effective as of Aug. 1, 1918:

For the First 350 Cu. Ft. or Less per Month

Meter Size	
3 light	$0.37
5 "	0.37
10 "	0.37
20 "	0.49
30 "	0.61
45 "	0.73

For the First 350 Cu. Ft. per Month

Meter Size	
60 light	$0.92
100 "	1.10
150 "	1.40
200 "	1.65
250 "	1.83
300 "	2.14
400 "	2.44

For meters larger than 400 light and for batteries of meters there shall be a minimum monthly charge for the first 350 cu. ft. or less per month at the rate of $0.61 for each 100 lights of capacity.

The company shall render minimum monthly bills and collect the amount of the same from consumers using meters larger than a 10-light meter, in accordance with the following schedule:

Meter Size	Min. Mo. Bills
20 light	$0.61
30 "	1.22
45 "	1.53
60 "	1.83
100 "	2.44
150 "	3.05
200 "	3.66
250 "	4.88
300 "	6.10
400 "	7.32

For meters of more than 400-light capacity and for meters in batteries the company shall render minimum monthly bills and collect the amount of the same at the rate of $1.83 for each 100 lights of capacity.

The primary rate shall be 88 cents for each 1,000 cu. ft. of gas used in any one month in excess of the first 350 cu. ft. used in said month and within a total monthly consumption of not more than 10,000 cu. ft.

The secondary rate shall be 82 cents net for each 1,000 cu. ft. of gas used in any one month in excess of the first 10,000 cu. ft. used in said month and within a total monthly consumption of not more than 50,000 cu. ft.

The tertiary rate shall be 65 cents net for each 1,000 cu. ft. of gas in excess of the first 50,000 cu. ft. used in any one month.

To Hold a Hearing of Lansing Company Rates

Public hearings on the proposed new franchise for the Lansing (Mich.) Fuel & Gas Company, now before the city council, will be held in the council rooms of the City Hall. These are open meetings at which the citizens of Lansing have the right and opportunity to deliberate with the council and discuss the issues raised by the proposed changes in the company's contract with the city.

The city charter places every safeguard around such proceedings as this one, and gives every citizen the privilege of not only determining the matter finally at the polls, but of reviewing the matter with the council and suggesting alterations or changes of any kind in the new franchise. It requires that these two public hearings be held as have been designated.

In compliance with the action of the council, City Attorney Rhoads delivered recently to City Clerk Parsons a copy of the Hageman & Erickson report made for the city on the business and property of the gas company.

Imperial Valley Company Authorized to Increase Rates

The California Railroad Commission has authorized a new schedule of gas rates for the Imperial Valley Gas Company, to meet the higher costs of operation. In 1915 oil was $1.34 a barrel in the valley. It is now $2.52, and everything else is higher.

Turlock Gas Goes Up

The railroad commission has authorized the Turlock (Cal.) Gas Company to increase its gas rates to consumers in Turlock, Stanislaus County, effective Sept. 6, as follows, per meter per month:

	Gross	Net per 1,000 Ft.
First 500 cu. ft.	$1.10	$1.00
Next 2,500 cu. ft.	1.80	1.70
Next 4,000 cu. ft.	1.65	1.55
Next 8,000 cu. ft.	....	1.35
All over 15,000 cu. ft.	....	1.15

The net rate is effective if bills are paid before the 10th of the month.

Civil Service Examination for Gas Engineer or Chief Gas Inspector to Take Place Oct. 5

An examination will be held Oct. 5, 1918, for the position of gas engineer or chief gas inspector with the Public Service Commission, Second District, at a salary not to exceed $3,000. Application for the examination must reach the civil service commission not later than Sept. 25 and application forms will not be sent out by mail after Sept. 23.

The duties are to supervise the testing of gas and gas meters, to investigate and report on questions concerning gas manufacture and distribution, and to make inventories and appraisals of gas properties. Candidates must have had an education equivalent to graduation in chemistry or chemical engineering at a recognized college or university, and at least three years' practical experience in work related to the duties of the position. Subjects of examination and relative weights: Written examination, 2; experience and personal qualifications, 3. Open to non-residents.

Indiana Company Wants to Issue $50,000 Stock

The Indiana Fuel & Light Company, of Kendallville, Ind., has filed a petition with the public service commission for permission to issue $50,000 worth of preferred stock for the purpose of paying "for improvements made and to be made."

Permission to Discontinue Service Sought by Calais Company

The St. Croix Gas & Light Company, of Calais, Me., has filed a petition with the public utilities commission to allow it to discontinue its service and has notified its customers on both sides of the river of the probability of the discontinuance of the service at an early date. They claim that the increased cost of coal and labor and the decreasing number of gas takers have made the business an unprofitable one for the past two years and that they have lost nearly $10,000, and the company was unwilling to risk any more money in attempting to give service pending a more prosperous period. The company has provided gas for the two sides of the river since 1861, and it has been used for all purposes.

Boston Consolidated Output

The Boston Consolidated Gas Company output in August was 433,447,000 cu. ft., or 3.6 per cent increase over 418,437,000 cu. ft. in August, 1917.

Women Employed as Meter Readers in Haverhill

The Haverhill (Mass.) Gas Company is the first Haverhill corporation to employ women to perform work that has hitherto been done by men. The company has 13,000 meters and has had a force of men reading the meters, as well as collecting money from slot meters. The scarcity of young men is responsible for the employment of women. The pay of the women is dependent upon their ability.

Dividends of Middle West Utilities Company Deferred

Samuel Insull, president of the Middle West Utilities Company, in a letter to the stockholders announces that the declaration of preferred dividends in certificates will be deferred "for the time being." His letter reads:

"Public discussion indicates quite clearly that the normal tax on incomes will be very considerably increased. While it is not altogether clear that the interest-bearing certificates heretofore issued in lieu of cash dividends upon preferred stock will not be taxable as income, the board of directors, having due regard to the wishes of stockholders from whom they have heard, are persuaded that it is to the best interest of the stockholders for the time being to defer the declaration of preferred dividends in certificates and allow such dividends to accumulate."

Lone Star Company to Make Its Headquarters in Dallas

Headquarters of the Lone Star Gas Company, now at Fort Worth, Tex., will be moved to Dallas, according to announcement made recently by T. E. Jackson, president of the Chamber of Commerce and Manufacturers' Association. One entire floor at least in the new American Exchange Bank Building will be occupied by the offices of the company.

The petroleum committee, composed of Gilbert H. Irish, chairman, A. V. Lane, D. E. Waggoner, J. S. Kendall, J. Dabney Day and M. E. Martin, have had the matter actively in hand for some time and, with the active co-operation of Mayor J. E. Lawther, were responsible for the establishment of the headquarters of the big company in Dallas.

F. M. Lege, Jr., vice-president and general manager of the company, is well known in Dallas, having formerly held the position of general manager of the Dallas Power & Light Company. Prior to his coming to Dallas his home was at Galveston, where he took a very prominent part in commercial activities. He was president of the Galveston Chamber of Commerce for several years.

Extracts from an Address by A. H. Krom, Director of Engineering, U. S. Employment Service

Before the National Association of Technical, Educational and Commercial Employment Agencies Convention, Aug. 30, 1918, Hotel Sherman, Chicago

To win the war the people of the United States have unanimously supported the policy of "one for all and all for one—each in his own place." Every American should answer this question to-day: Am I working up to my average? Every American working below the average, the 100 per cent, is shirking. He is forcing someone else to do part of his work. This cannot be permitted, and is not being permitted, because the great War Labor Board, the War Labor Policies Board and the United States Employment Service have taken over the affairs of the individual owner and the army of workers. Under their direction over 500 offices and 20,000 agents are working throughout the United States, giving free service to both employer and the employee. By proclamation, the President has supported their work. He has urged that employment be handled directly through this service. Thus the U. S. Employment Service furnishes a special solution to the problem faced by the Government in meeting for the worker the abnormal conditions caused by changing from a peace to a war program. Many conditions are abnormal. Workers needed in peace times have been thrown out of work by war de-

mands. Personal ability and knowledge of an industry have not been causes for preventing change. In other words, upon declaration of war, the Government, acting as the representative of each worker, closed his personal contract for a different kind of a job. It could do this because it is familiar with exact conditions in all departments. It knows where the need is and how great. It knows the location of its resources and how to adjust them. It is the only single agency large enough for the job. As a result we know that a man is placed correctly when he has been given his position through and under the direction of the Government itself. The agency which is doing this placing directly for the Government is the U. S. Employment Service. As a result we know that a man placed by the employment service has been placed in accordance with all military, industrial and governmental demands.

Only by full governmental supervision, from the highest official down to the unskilled workman, can the necessary war production be obtained in the time that is required. You can well appreciate the care necessary for the proper placing, distribution and examination of all workers.

The war demands executives of a particular class, men with a training and experience that is different from that of peace times. The change of conditions has made it especially hard for professional men of various kinds and for business executives to find their places in war work. The problem is great, and the Government by solving it will save the time of many men who have been more or less thrown out of their regular duties, or whose business has been stopped by the war. At present, the demand for executives in the war industries is principally for technical engineers who have had professional and business experience. This war has been frequently called a war of engineering, and it is certainly a technical man's war. All the mechanisms of the battle field, the air and the water have to be originated, designed and constructed by the technical man. All the gases, chemicals and deadly compositions of the daily fight are prepared by the technical man. The transportation of the armies, their fortifications and protections are the work of the technical man. As a result the technical man is needed most. He is needed for all important operations. He is the leader and director. All others must follow his orders. At present a careful study is being made as to the supply and demand of this class of help. Statistics are being compiled from the personal registration blanks, and the survey which is being made through the War Industries Board. From returns received to date there is apparently no shortage except in two or three special classes. These are, in particular, chemical engineers and mechanical draftsmen and designers.

The employment service for professional men is operated principally in the offices at Washington and other large cities. These offices collect information from each applicant registered with the service. After classification, his record is filed, with correspondence, reference and such other matter as may be necessary for employment purposes. The applicant is indexed according to his location by State, salary, kind of experience and profession. In a similar manner employers are registered and classified according to the help they regularly employ, and especially indexed for additional demands. The examiners are acquainted with the lists of employers on war work, and in many cases they furnish them with the names of employees especially needed. With few exceptions, the service has been able to fill all orders for help, and the daily reports indicate that unfilled orders are generally for positions which are listed at salaries below the current rate.

Complete, systematized organization of this sort is sure to carry out the war program and to furnish supplies for our boys on the front. On the other hand, competition and independent effort will only block operations. It will delay our winning the war by causing unnecessary losses. Every citizen to-day is anxious to do his part in the war program. There is no business other than war, and there is no one to serve in America but Uncle Sam. Now Uncle Sam is in the employment business.

If every technical man will register his services with the Government he will be doing his duty toward winning the war.

THE WAYLAND OIL & GAS COMPANY has declared the usual quarterly dividend of 2 per cent on the common stock, payable Sept. 10 to stockholders of record Sept. 1.

THE ST. LOUIS BUFFALO OIL & GAS COMPANY, Buffalo, Okla., capital $100,000.

Advanced Rate Sought for Lewiston

The Lewiston (Me.) Gas Light Company has filed with the public utilities commission a new schedule of rates which increase the price of gas from $1.30 to $1.60 per 1,000 ft., an increase of 30 cents per 1,000 ft. net. The present price is $1.40 per 1,000 ft., but if paid within ten days the customer receives a discount of 10 cents per 1,000 ft. If approved these new rates will go into effect on Sept. 23 next.

Rate of $1.35 Asked by Wilmington Company

Having received a petition from the Wilmington (Del.) Gas Company for permission to increase the rates now charged its gas consumers, members of the board of public utilities commission have decided to hold a meeting to consider the request.

The letter received by the commission from the gas company asks the right to charge $1.35 per 1,000 cu. ft. of gas, an increase of 25 cents per 1,000 ft.

Higher Rate Allowed Needles Company

The Railroad Commission of California has authorized the Needles Gas & Electric Company to increase its rates after thoroughly investigating the affairs of the company, extending over a period of eight months.

The increase granted is 30 cents per 1,000 cu. ft. on all gas sold. This increase in rates is made after three public hearings have been held, and after accountants and engineers have examined the books and property of the company.

Westbrook Consumers to Pay Higher Rate

The public utilities commission has rendered a decision authorizing the Westbrook (Me.) Gas Company to increase its rates effective Sept. 1.

The new rates are $1.75 for the first 2,000 cu. ft. of gas, $1.60 for the next 3,000 cu. ft., $1.40 for the next 5,000 cu. ft., and $1.10 in excess of 20,000 cu. ft., while the minimum rate at each meter will be 50 cents per month.

Commercial and Industrial Activities at San Diego Cause Big Increase in Output

San Diego, Cal., located on the Pacific Coast in the extreme southeast corner of the United States, and famous principally for the wonderful climate, might be expected to be somewhat depressed under war conditions. The facts are exactly contrary. Shipbuilding, shipping activities, naval and air service activities and the nearby location of Camp Kearney have resulted in greatly increased property. This is reflected in the business being done by the San Diego Consolidated Gas & Electric Company, which is providing and distributing not less than 40 per cent more gas and 25 per cent more electricity than ever before.

Chart Shows Greater Number of Accidents Due to Electrical Causes

A great preponderance of accidents due to electrical causes over those due to gas is shown in a rather remarkable chart which is to be exhibited at the annual convention of the National Safety Council at the Hotel Statler, in St. Louis, during the week of Sept. 15 next.

The chart represents a three-year investigation by the Industrial Commission of Wisconsin extending throughout 1915, 1916 and 1917, during which period every industrial accident in the State was investigated and record made of the cause, the number and nature of injuries, and the amount of time lost through the death or injury to workmen. The chart covers injuries to 40,980 persons, 517 deaths and an aggregate loss of 5,951,838 working days through accidents in industries.

Under accidents caused by electricity, the chart shows 165 injuries, 30 deaths and a loss of 192,634 working days. Under accidents caused by "gas, illuminating," there are listed 8 injuries, 1 death and a loss of 6,109 working days. There is also a classification termed "caused by asphyxiation," though there is nothing to indicate how many such accidents were caused by asphyxiation from gas and how many from smoke and other sources. This cause was responsible for 16 injuries, 8 deaths and a loss of 40,144 working days.

Even if it is assumed that all the asphyxiation accidents were due to gas the chart shows that more than six times as many injuries were caused by electricity than by gas, more than three times as many deaths caused by electricity than by gas, and almost four times as many working days were lost through electricity than gas.

Mount Carmel Gas Light Company Bankrupt

Creditors of the Mt. Carmel Gas Light Company, of Mt. Carmel, Pa., filed a petition in the United States Court asking that the company be declared bankrupt. It is alleged by the creditors that officers of the company, knowing that the concern is in financial difficulties, have allowed another concern in which they are financially interested to secure judgments against the light company, thereby giving a certain creditor a preference over others.

The allegations set forth that the Mt. Carmel Gas Light Company has been insolvent for several months and that it owes debts in excess of $1,000. That several of the officers of the alleged bankrupt are also officers of the Guarantee Trust & Safe Deposit Company, of Mt. Carmel, and that they confessed judgment against the light company and in favor of the trust company for $15,592.

Increase Denied Queens Borough Company

On motion of Commissioner Kracke, the public service commission recently denied the request of the Queens Borough Gas & Electric Company, Brooklyn, N. Y., for permission to increase its rates for gas from $1.15 to $1.40.

It was held that proper reason for the relief asked had not been given.

Chuctanunda Company Raises Rates

Block rates (per 1,000 cu. ft.) for artificial gas, served by the Chuctanunda Gas Light Company, of Amsterdam, N. Y., all kinds of service, increased from $1.25 for less than 5,000 cu. ft., $1.20 for 5,000 to 10,000, $1.15 for 10,000 to 20,000, and $1.05 for 20,000 or over per month to $1.45 for first 5,000 cu. ft., $1.40 for next 5,000, $1.35 for next 10,000 and $1.25 for all over 20,000 per month; minimum monthly charge increased from 25 cents to 50 cents per meter. New service regulations provide for installations of prepayment meters set at rate of 25 cents for 180 cu. ft. of gas; minimum monthly charge 50 cents per meter. Effective Sept. 20, 1918.

Order of Indiana Commission on Heat Unit Standard as Will Apply to All Companies Where Increases are Granted

In the most precedential order that the Public Service Commission of Indiana has issued since the war referring to gas companies, the commission has just taken the stand that hereafter when companies are benefiting by war-time surcharges in rates the compensation for the company's service shall follow the actual furnishing of heat units by the company. The order came in the case in which L. S. Levy and others had petitioned the commission because of alleged inadequate service rendered by the Indiana Fuel & Light Company at Kendallville, Auburn and Garrett.

Paul P. Haynes, of the commission, wrote the order, which will mark a complete change in the service regulations of Indiana gas companies so far as the commission is concerned. Hereafter companies shall keep the B.t.u. up to 600 if they are to receive the full amount of the rate allowed from customers, the commission says it has decided. The order follows in part:

The Indiana Fuel & Light Company owns and operates a gas plant at Auburn Junction, with pipe lines delivering gas to its distribution systems in each of the above cities.

Witnesses claimed that at frequent intervals during the past year meals could not be prepared on account of very little or no pressure, or a very low heating value of gas. In many instances housewives would have meals half cooked and the gas would "go out" and the food be spoiled. On many other occasions there would be little or no gas at meal hours. Coal and oil ranges have been substituted for domestic uses by consumers on account of their inability to secure an adequate supply of gas. Manufacturers testified that essential manufacturing proc-

esses were delayed on account of the poor quality of gas.

Reports of calorimeter tests required by the commission and made by the company show the heat value of the gas to have been on many days below 500 B.t.u. per cubic foot, and several instances below 450 B.t.u. This condition prevailed until about two weeks before the hearing herein, when the tests showed a decided improvement in the quality of gas delivered, with averages ranging from 525 to 580 B.t.u.

The evidence revealed that there was no standard in either the pressure or quality of gas produced. The company's witnesses contended that the failure of the company to render adequate service was due in a large measure to weather conditions and a poor quality of gasing coal. An examination of the gas plant was made by the commission's engineers, and their report was summarized at the hearing by a competent witness. It appeared conclusive and was later admitted by the company's representatives that the continued failure of the company to deliver a proper quality and pressure of gas was due almost entirely to either a faulty plant design or installation or inefficient operation. The marked improvement in the service during the recent weeks clearly shows that fair service can be rendered, and this improvement has been made in spite of the fact that a poorer quality of gasing coal has been used than previously when the service was extremely bad.

Complaint also was made by numerous witnesses that their gas bills were unusually high.

Numerous complaints from different parts of the State regarding gas service have reached the commission. Many of them complain of the service rendered by companies which have been granted war surcharges. It is true that the coal situation is bad and that at times it is difficult to maintain adequate heat units. The Federal Fuel Administrator, however, has but recently assured this commission that no Indiana gas plant need suffer for suitable gas coal. The costs entering into the production and delivery of 600 B.t.u. gas are allowed by the commission as an operating expense, and the increased cost of producing good gas due to war-time conditions should not and does not fall entirely upon the utility. The commission will always allow rates sufficient to pay the reasonable cost of producing the quality of gas required and sufficient to allow for depreciation and what the commission believes to be a reasonable return during the war period. So, other than conditions over which the utility has no control, there is no reason or justification for the failure of gas companies to meet the standards required by the commission.

Especially in view of war rate increases and the financial relief which has been granted to gas companies generally throughout the State it is imperative that nothing shall be left undone by them to render adequate service. After all, the business of a gas company is the selling of heat units, and when it delivers a short measure of heat units and collects the full measure price, it is receiving payment for an unrendered service. In the future the Public Service Commission of Indiana will attempt to approximate and make effectual standards of gas service, whereby service rendered shall be the measure of compensation.

In the determination of equitable gas rates the price paid should bear a reasonable relation to the heat units delivered. The consumer, generally speaking, should not be required to pay for more than he receives.

The commission recognizes that in determining the proper bases for such standards many perplexing and intricate problems are presented. Investigations are now being conducted by the engineering staff of the commission. The experts of Purdue University and the National Bureau of Standards will be consulted, as well as other commissions and representatives of the operators. A complete and thorough study of the questions presented will be made before final and permanent standards are adopted. Such investigation will require considerable time. In the interim the commission will, however, establish temporary rules which will recognize the relationship between heat units delivered and the price paid.

In the instant case, therefore, the commission will provide for a percentage credit or refund to consumers to cover reduced B.t.u. delivered.

Note—The promulgation of a national war-time standard of 528 B.t.u. per cubic foot, now contemplated by the National Fuel Administrator (or the adoption of any other standard), will necessarily require an adjustment of present rate bases, as well as a modification of the appended order.

It is therefore ordered by the Public Service Commission of Indiana that the Indiana Fuel & Light Company shall install and equip itself with a complete standard calorimeter outfit of a type approved by the commission in each of the cities of Auburn, Garrett and Kendallville, and shall test the value of the gas supplied, using methods of testing in accordance with the best practice. Such tests shall be made at least once each day.

It is further ordered that the following rules and regulations shall govern the quality and pressure of gas and the billing to the consumer:

Required Heating Value

(a) The company shall supply gas which at any point within a mile of its manufacturing plant shall have a monthly average total heating value of not less than 600 B.t.u. per cubic foot, and at no time shall the heating value of the gas at such point be less than 550 B.t.u. per cubic foot; provided, however, that in the city where the gas sold is manufactured in another city the tests of heating value shall be made at or near the center of consumption in the city where the gas is sold.

To obtain the monthly average total heating value of a gas the results of all tests of heating value made on each day during the calendar month shall be averaged, and the average of all such daily averages shall be taken as the monthly average.

It is understood that the gas of the heating value thus defined has a heating value per cubic foot as registered by the consumer's meter proportionately as much less than the said 600 B.t.u. per cubic foot as the total pressure of the gas in the consumer's meter is less than equivalent to 30 in. of mercury pressure.

Where the total pressure of the

(*Continued on page* 262)

Economic Company Seeks Increased Rate

A petition was filed with the railroad commission recently by the Economic Gas Company, of Los Angeles, Cal., asking the commission to grant an increase in rates equal to that which may be fixed by the commission upon the hearing of the petitions of the Los Angeles Gas & Electric Corporation and the Southern California Gas Company, of Los Angeles. The Economic Gas Company asserts in its petition that its expenses, due to the war and to higher distribution costs, have so increased that a raise is necessary for the continuance of service.

Increased Rates Asked by San Diego Company

The San Diego Consolidated Gas & Electric Company petitioned the railroad commission Sept. 3 for an increase in its rates, rendered necessary by reason of the following estimated increases in operating expenses: Materials, $29,000; labor, $70,000; fuel and purchased power, $70,000; miscellaneous, $15,000; depreciation, $30,000, making a total of $214,000. The company asks that the increased raise be confined to either the gas or the electric department separately, or be spread over the rates charged in both departments, as the commission may decide.

T. M. Phillips' Gas Company Files New Rate Schedule

The T. W. Phillips Gas & Oil Company, Butler, Pa., has filed with the public service commission a new tariff of rates governing natural gas service in Allegheny, Armstrong, Butler, Clarion, Indiana, Jefferson and Westmoreland Counties, to become effective on Sept. 20, making the following increases in existing rates: Net rate for Class 1 consumers, domestic consumers and other consumers using gas in small quantities, is increased from 27½ cents to 35 cents per 1,000 cu. ft., in addition to which there is to be a readiness-to-serve charge of 25 cents a month.

Rate for gas used temporarily for cleaning out wells, etc., is increased as follows: Gas for boiler from $5 to $8 a day; gas for forge from $1 to $1.50 a day; gas for each light from 50 cents to 75 cents a day; gas for each stove or heater from 50 cents to $1.50 a day.

Increased Rate Allowed Puget Sound Company

The public service commission recently granted the proposed increases in gas rates for the Puget Sound Gas Company, of Everett, Wash., affecting Everett, Snohomish and Monroe. In granting the increases the commission states that the new rates seem to be exceptionally high, but do not cover the increased cost of materials used in the manufacture of gas. The new rates call for a minimum charge of $1 for the first 100 ft. and for $2.50 for the first 1,000 ft.

Westfield Rates Raised

Beginning Sept. 1, the new rates for gas to be charged by the Westfield (Mass.) Gas & Electric Light Works are effective, according to a vote taken by the commissioners recently. The prices of gas will go from $1.45 to $1.70 per 1,000 cu. ft.

Commission Grants Beaver Dam Company Increase, Effective From Sept. 1

Gas rates for the city of Beaver Dam were raised beginning with Sept. 1. Acting upon a petition by the Beaver Dam (Wis.) Fuel & Light Company, the commission, after an investigation, has granted an increase in all of the rates of 20 cents per 1,000 ft., except in the rate to consumers using 35,000 ft. or over per month, where an increase of 25 cents per 1,000 is allowed.

The new rates are as follows: First 2,500 cu. ft. per month, $1.80; next 2,500 cu. ft. per month, $1.70; next 30,000 cu. ft. per month, $1.60; over 35,000 cu. ft. per month, $1.20.

The minimum remains at 60 cents per month with a discount of 10 cents for each 1,000 ft. where payment of bill is made before the tenth of month.

Increased Rates Allowed Modesto Company

An increase in rates has been allowed the Modesto Gas Company by the California Railroad Commission. The rates for gas for all regular meter readings taken on and after Aug. 26, 1918, are as follows:

First 500 cu. ft. or less per meter per month, $1.10 gross, $1 net; next 3,000 cu. ft., $1.75 gross, $1.65 net; next 3,500 cu. ft., $1.60 gross, $1.50 net; next 8,000 cu. ft., $1.30; all over 15,000 cu. ft., $1.10.

The restaurant service consumption rate: First 30,000 cu. ft. or less per meter per month, $1 per 1,000 cu. ft.; all over 30,000 cu. ft., 85 cents; minimum monthly bill, $30.

The net rate is effective if the bill is paid at the office of the company on or before the tenth of the month next succeeding that for which the bill is rendered, otherwise the gross rate is effective.

Missouri Commission Grants Increase to St. Louis County Company

The Public Service Commission of Missouri has just granted the St. Louis County Gas Company an increase in rates amounting to from 18 to 30 per cent on gas service for domestic purposes and almost 100 per cent on gas to the industrial consumer. It is interesting to note that the commission authorized exactly the rates agreed upon at a conference between representatives of the gas company and the city officials of the seven corporate towns served by the company.

Though the consumers at first organized a league, the avowed intention of which was to oppose the gas company's request for increased rates, General Manager Egan, of the gas company, soon won the league members over to the point of view of the company by showing them the figures on the company's cost of doing business. The company met the objectors half way, and a compromise schedule of rates was agreed upon.

The rate for gas to industrial consumers using 200 or more cubic feet per hour was raised from 40 to 75 cents per 1,000 cu. ft. for the first 40,000 cu. ft. The new rates for domestic service are $1.40 per 1,000 for the first 10,000 cu. ft., $1.35 for the next 15,000, $1.25 for the next 25,000 ft., $1.15 for the next 25,000 ft., $1.05 for the next 25,000, and 95 cents for all over 100,000 cu. ft. A 5 per cent discount will be allowed for prompt payment of the monthly bills.

The advanced schedule is effective Sept. 1 and until Jan. 1, when it is expected an extending order will be issued by the commission. This company does not serve the city of St. Louis.

THE CHAMPION GARBER OIL & GAS COMPANY, Chickasha, Okla., capital $20,000.

Petition Filed by Mobile Company Requesting Increase

A petition has just been filed with the public service commission by the Mobile (Ala.) Gas Company asking that it be permitted to increase its gas rates, and requesting that the matter be considered by the commission as early as possible. The proposed increase amounts to 25 to 30 per cent.

Under the law, the commission cannot consider the petition at the regular September meeting, owing to the fact that the petition was not filed early enough. However, the commission may arrange to take the matter up at a special session.

Lock Haven Consumers Notified of Increase

The Lock Haven (Pa.) Gas Company has served notice on consumers that beginning Oct. 1 the price of gas will be increased from $1.25 to $1.50 per 1,000 ft. for 2,000 and over. Under 2,000 ft., from $1.50 to $1.75 per 1,000 ft. will be charged.

Order of Indiana Commission on Heat Unit Standard as Will Apply to All Companies Where Increases Are Granted

(*Continued from page* 260)

gas in the consumer's meter defined as the sum of the average local barometric pressure and the average pressure of the gas above atmospheric pressure is less than equivalent to 29 in. of mercury pressure, any statement published by the company as to the average heating value of the gas supplied shall indicate both the heating value per cubic foot measured under standard pressure conditions and the heating value per cubic foot measured under the total pressure of gas in the meters of the consumers, in order that the heat available per cubic foot of gas paid for may be made clear.

(b) Rebate when Gas Is Below Standard Heating Value.—The consumer shall be billed at the legal rate when the total B.t.u. content averaged for the month does not fall below 590. When the total average B.t.u. content does fall below 590 the consumer shall be rebated by the company in amounts set out in the following tabulation:

590 B.t.u. and more, no rebate.

From—	To and including—	Per cent Rebate
590 B.t.u.	580 B.t.u.	2.50
580 "	570 "	3.50
570 "	560 "	4.50
560 "	550 "	6.00
550 "	540 "	7.50
540 "	530 "	9.00
530 "	520 "	12.00
520 "	510 "	15.00
510 "	500 "	19.00
500 "	490 "	24.00
490 "	480 "	30.00
480 "	470 "	37.00
470 "	460 "	46.00
460 "	450 "	55.00
450 "	440 "	64.00
440 "	430 "	73.00
430 "	420 "	82.00
420 "	410 "	91.00
410 "	400 "	100.00

Purity of Gas

(a) Total Sulphur.—The gas supplied by the company shall in no case contain more than 30 grains of total sulphur per 100 cu. ft.

(b) Hydrogen Sulphide.—In no case shall the gas sold for lighting or heating contain an amount of hydrogen sulphide (sulphuretted hydrogen) detectable by the following test:

The gas shall be considered to contain no more than a trace of hydrogen sulphide if a strip of white filter paper freshly moistened with a solution containing 5 per cent by weight of lead acetate is not distinctly darker than a second paper freshly moistened with the same solution after the first paper has been exposed to the gas for one minute in an apparatus of approved form through which the gas is flowing at the rate of approximately 5 cu. ft. per hour, the gas not impinging directly from a jet upon the test paper.

(c) All gas supplied by the company shall contain in each 100 cu. ft. not more than 5 grains of ammonia.

(d) The company should daily test the gas supplied by it for the presence of hydrogen sulphide and should make and preserve the test papers for at least one year.

(e) The company shall provide and maintain such apparatus and facilities as are necessary for the determination of total sulphur and ammonia in the gas, and should daily determine the amount of total sulphur and ammonia in the gas distributed by it.

Pressure of Gas

(a) Subject to the approval of the commission the company may divide its distributing system into as many districts as it shall consider desirable, and it shall fix for each such district or for its distributing system as a whole a normal pressure of gas which it proposes to maintain. Gas shall be supplied at a pressure never varying by an amount more than 2 in. of water pressure above or below the normal pressure thus fixed, as measured at the outlet of the company's service pipe to any consumer; provided, however, that the maximum pressure on any day at any service outlet shall never be greater than twice the minimum pressure on that day at the outlet. The normal pressures thus fixed by the company and any proposed changes in these normal pressures shall be reported to the commission and shall be approved by the commission before going into effect.

(b) The company shall maintain on its distributing system at least one recording gas pressure gauge for each district fixed under the provisions of this rule, and said company shall not maintain less than two such recording pressure gauges.

The Indiana Fuel & Light Company is hereby ordered to file with the commission on or before the fifth day of each calendar month a verified report of the daily tests of the heating value of the gas showing the monthly average heating value thus arrived at.

Kansas City Gas Company Makes Application for Higher Rates

The Kansas City (Mo.) Gas Company applied recently to Judge Booth of the Federal court, sitting at St. Paul, for permission to charge $1 per 1,000 cu. ft. for natural gas and an additional 50 cents a month meter charge.

This is an increase of 20 cents over the 80-cent rate the company and its allied companies in several cities in Kansas and Missouri tried to put in effect beginning July 29, last. The cities affected resisted the move before Judge Booth, and he ruled against it.

J. W. Dana, attorney for the Kansas City Gas Company and its con-

nections, then asked Judge Booth if he would entertain a petition to be submitted later for an increase from the present price of 50 cents per 1,000 cu. ft. and the 50 cents a month additional charge for meters. The judge answered that his court is open at all times to matters under his jurisdiction, but he did not give the impression that he would countenance any increase exceeding the 60-cent rate, in view of his ruling against the 80-cent rate.

When the hearing was heard before Judge Booth protesting against the 80 per cent rate, Kansas City had no part. City Counsellor Harber, who is in Washington now on legal business, took the position that Judge Booth had no jurisdiction so far as Kansas City is concerned. Colonel Harber maintained that the city has a contract with the gas company that the maximum rate shall not exceed 35 cents per 1,000 cu. ft., and that Judge Booth in the first instance exceeded his powers when he permitted the company to raise the rates to 60 cents per 1,000 cu. ft. The appeal comes up in the Supreme Court Oct. 14.

THE WILMINGTON GAS COMPANY has declared the regular semi-annual dividend of 3 per cent on the preferred stock, payable Aug. 31.

Personal Notes

ALBERT E. REYNOLDS, for many years manager of the tar department of the Denver (Col.) Gas & Electric Light Company, died suddenly of heart disease on Aug. 18.

C. E. GRAY, JR., has severed his connection with the Utah Gas & Coke Company, Salt Lake City, Utah, and assumed his new duties as superintendent of manufacture of the Grand Rapids (Mich.) Gas Light Company Sept. 1.

F. L. MURPHY, of Providence, R. I., assumed the duties of gas works superintendent of the Utah Gas & Coke Company Sept. 1, succeeding C. E. Gray, Jr.

J. C. MCDOWELL, who is in general charge of the natural gas and oil operations of the Doherty Organization, has recently been elected president of the Crew Levick Company.

J. CARROLL AARON, commercial agent of the Peoples Gas Light Company, Manchester, N. H., has been prevailed upon to become executive secretary of the Board of Commerce. The arrangement with Mr. Aaron makes it possible for the Board of Commerce to continue its activities uninterrupted until a permanent secretary may be chosen. The plan by which Mr. Aaron's services were secured was worked out by President T. Edward Cunningham, who arranged with the gas company so that the services of the former might be available for the major part of the time. Mr. Aaron was formerly secretary of the Manchester Publicity Association and scored an emphatic success. He has always kept himself in close touch with Board of Commerce work, having served as a member of the board of directors.

CHARLES T. ORR, of the Athletic Smelting Company of Fort Smith, Ark., has purchased a controlling interest in the Le Flore County Gas & Electric Company, of Poteau, Okla. Under the new ownership of the company, Mr. Orr becomes president of the company. Under the new ownership of the Le Flore County Gas & Electric Company, a large part of its output through the Fort Smith pipe line will go to the production of Government orders for export, in which work the Athletic Smelter Company is engaged. The Athletic Smelter has for some time had pipe connections with the Poteau line.

FRED BROWN, of the Tacoma (Wash.) Gas Company, has been appointed manager of the Oregon Power Company at Eugene.

Commission Orders Lower Rate for Danvers

The gas and electric light commission has ordered the Beverly (Mass.) Gas & Electric Company to fix prices of gas in Danvers on the same scale as it is sold in Beverly. The cost to consumers in Beverly is $1.40 and in Danvers $1.50.

The excess has been charged to meet expenses incident to the taking over by the Beverly company of the business of the Danvers Gas Light Company. The consolidation was effected in 1911.

The commission in its finding says: "During the seven years intervening the Beverly company's business in Danvers has increased in greater proportion than the output in Beverly."

Construction Notes

Toluol Plant of Albany Municipal Plant Nearing Completion

Workmen in the employ of the Government are busily engaged in hurrying to completion a three-story brick building on the east end of the property of the Municipal Gas Company, Broadway, Albany, N. Y. The structure is erected and roofed, but lacks interior finish and the necessary machinery for the extraction of toluol, which the War Department wants for the manufacture of trinitrotoluol.

Washington (Ind.) Gas Plant to Be Improved

Edward C. Burch, superintendent of the gas plant of the Washington (Ind.) Water, Light & Power Company, left for St. Louis recently to close a contract for the installation of two additional gas benches and to purchase additional equipment which, when installed, will enable the plant to manufacture gas from either part Indiana gas coal or all Indiana coal. A compressor, to increase the pressure on the distribution mains, and an instrument for testing the quality of gas will also be installed.

The old equipment will be rearranged to facilitate the handling and purifying the gas made from Indiana coal. The new equipment will not be in service until about Nov. 1.

Work Started on New Gas Plant at Eastland

J. E. Maxwell, vice-president of the recently organized Eastland (Tex.) Gas Company, was in Fort Worth recently completing arrangements for the starting of work on the gas plant which will furnish the town of Eastland with gas for fuel and heat. According to Mr. Maxwell, the Eastland Gas Company has been capitalized for $90,000, and with the exception of about $16,000, all of the stock has been subscribed for. All of the necessary pipe meters and other fixtures have already been purchased and work on laying the mains has been started.

The supply of gas will be obtained from the Brashear well, about 6 miles

east of Eastland. The capacity of the well has been reported at 15,000,000 cu. ft. and it has a rock pressure of 1,200 lb. However, it will be delivered to the gas company's mains at about 75 lb. pressure.

According to the plans of the company the system will be installed in units, and in following this method the company will be able to furnish the gas to its consumers as it is needed. Large mains will encircle the town, and they will be tapped with laterals to the sections where gas service is requested.

Extensive Improvements Are Being Made by Traverse City Gas Company

Equipping Plant to Meet Demands for Gas

Improvements are being made at the plant of the Traverse City (Mich.) Gas Company. They have completed a new extension to the retort house to accept two new benches of sixes, one of which has recently been completed by the Missouri Firebrick Company.

Later the company expects to install another exhauster and, among other improvements, a 1,000-ft. holder.

In order to supply the demand for gas the company is making plans involving the expenditure of several thousands of dollars.

New Gas Main of San Joaquin Company Completed

The San Joaquin Light & Power Company, Los Angeles, Cal., has completed its gas main which joins its steam auxiliary plant at the north end of Union Avenue with the Midway gas line of the West Side, and it has started to use gas instead of oil as the fuel.

It is estimated that from 1,600 to 1,800 bbl. of fuel oil will be saved the Government for war use, with a saving of more than $2,000 daily to the San Joaquin company. The cost of the new line is estimated at more than $200,000.

The plant by the new system will use from 6,000,000 to 7,000,000 cu. ft. of gas daily, more than eight times as much as is used for the entire city.

In constructing the line the acetylene oxwelding method was used.

The line has a direct connection with the Midway gas line of Los Angeles. Approximately 127,000 ft. of pipe were used in the new line. Work on the gas line started about two months ago, under the direction of Frank Easton. A slight delay was caused by the blowing up of a section of the pipe line due to imperfect pipe.

Since the beginning of the war fuel oil has advanced in price from 50 cents a barrel to $2, gas accomplishing the same results costing about 50 cents at the present time.

Less than 20,000,000 cu. ft. of gas is used in Bakersfield monthly, while the auxiliary station uses from 6,000,000 to 10,000,000 cu. ft. each day.

New Artificial Gas Rate Rejected by Richmond Board

The Richmond, Ind., board of public works rejected the artificial gas rate presented by the Richmond Light, Heat & Power Company, and the new schedule will be fixed by the State public utilities commission.

Reports of Pacific Gas & Electric Company Show Larger Earnings

Net earnings of the Pacific Gas & Electric Company, San Francisco, Cal., for the month of June show a good margin in excess of those of the corresponding month of last year, but for the twelve-month period, while gross earnings jumped more than $1,500,000, a decrease of $640,499 is shown.

Earnings statement for June and the twelve months ending June 30 follows:

	1918	1917		Changes
June gross	$1,860,815	$1,663,832	Inc.	$196,982
Net after tax, including miscellaneous income	783,781	747,083	Inc.	36,697
Surplus after charges and preferred dividends	300,548	257,849	Inc.	42,698
Twelve months' gross	20,613,258	19,084,424	Inc.	1,528,834
Net earnings income and miscellaneous income	7,408,883	8,051,017	Dec.	642,133
Surplus after charges and preferred dividends	1,605,763	2,519,282	Dec.	913,518

Comparison with May earnings figures shows that surplus for June doubled that of the previous month. Surplus after charges of $300,548 for June compares with $145,976 for the month of May.

THE GORTON NATURAL GAS COMPANY, Chickasha, Okla., capital $250,000. Incorporators, T. H. Williams, G. E. Montgomery, G. Gorton.

Increase Asked by Philadelphia Suburban for Delaware County

The Philadelphia Suburban Gas & Electric Company has filed with the commission a tariff making a 10-cent increase in the 1,000 cu. ft. rate for its Delaware County division, effective Sept. 27.

THE PITTSBURGH (PA.) OIL & GAS COMPANY reports for the six months ended June 30 earnings as follows: Gas division, $30,480; gasoline division, $9,557; oil division, $401,756; miscellaneous earnings, $17,857; total, $453,652. After deductions for operating expenses, reserve for taxes and depreciation, there remained a gross surplus of $140,562, out of which $80,000 was paid in dividends, leaving a net surplus for the half year of $60,561.

THE STANDARD GAS & ELECTRIC COMPANY has declared the regular quarterly dividend of 1½ per cent on the preferred stock of the company, payable Sept. 14 to stockholders of record Aug. 31.

THE BROOKLYN UNION GAS COMPANY has declared the regular quarterly dividend of 1½ per cent, payable Oct. 1 to stock of record Sept. 14.

THE OKLAHOMA GAS & ELECTRIC COMPANY has declared the regular quarterly dividend of 1¾ per cent on the preferred stock of the company, payable Sept. 14 to stockholders of record Aug. 31.

THE MUSKOGEE GAS & ELECTRIC COMPANY has declared the regular quarterly dividend of 1¾ per cent on the preferred stock of the company, payable Sept. 14 to stockholders of record Aug. 31.

OHIO CITIES GAS COMPANY has declared regular quarterly dividend of 1¼ per cent on preferred, payable Oct. 1 to stock of record Sept. 15.